Read this manual before operation

- The content includes of electric connections and operating steps
- System user manual

RDV8840G-MOD5

User manual

Shenzhen Ruida Technology Co., Ltd

Address: 202-203,B-Block,Technology Building, 1057 Nanhai Avenue,Nanshan District,, SHENZHEN, CHINA
Tel: 0755--26066687
Fax: 0755--26982287
E-mail: sales@rd-acs.com
Web: www.rd-acs.com

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Please make sure that the operation is correct and the method is safe when using the system. Some signs or words will be used to remind you of dangerous matters and some important information.

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Warning:

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The product has a plastic or metal casing to protect the exterior electrical component from damage. The product is wrapped in a foam bag and packed in an antistatic bag. If the package has any external damage, please check the goods and notify the carrier of the damage situation in writing.

Important:

After receiving the products, please check whether the outer packaging is in good condition, whether the product is complete after unpacking, and whether the parts are in good condition. If any damage, please contact RUIDA.

Keep the packaging materials and wiring accessories when unpacking. Please be careful when disassembling the package. After unpacking the goods, please check if the parts are complete. If you find that the parts are missing or the parts are damaged, please contact Ruida immediately.

The RDV8840G-MOD5 control system packing list is shown in the following table: (As the product is constantly updated, the accessories that may be received are difference).

Component	Quantity	Description
RDV8840G-MOD5(EC)-Mainboard Standard-Milk White cover	1 pc	
RDPAD8840G-MOD5- Standard-5-inches resistive touch screen	1 pc	
2.4GWiFi Antenna - Stick White	1	
2.4GWiFi antenna - extended spring wire	1	
Finished-8840-touch screen panel cable-1.5M	1	
RDCamera-Mini camera module	1	
USB camera line black flat wire -USB-A rotation MINI-2M	1	
Steel rail -275 x 35 x -7.5MMRDV8840G-MOD5 system	1	
RDPA terminal pack8840G	1 pack	

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Chapter 1 Overview

The main contents of this section:

- Introduction
- Controller model description

1.1 Introduction

RDV8840G system is a new generation laser control system developed by Ruida Technology, which has better hardware stability, abundant motion control design, and better resistance to high voltage and static interference. For the local area network control machine one-to-many, many-to-one equipment environment development of a new generation of laser system, the control system in the conventional laser cutting system to add a lantory control host and equipment machine communication between one-to-many, many-to-one, many-to-many diversity of communication methods, exempt from the conventional board connection barriers, through WiFi access to the LAN control, powerful, scalable.

1.2 Controller model description

RDV8840G-MOD5：
RDV: Ruida Technology Vision Series
-- 8840: Product model
-- G: Standard products
-- MOD5: 5 inches resistance Touch screen.MOD7: 7 inches resistance Touch screen. TC5: 5 inches Capacitive Touch screen. TC7: 7 inches capacitive touch screen

Chapter 2 Installation Dimensions

The main contents of this section:

- Mainboard mounting size
- Panel mounting size

2.1 Mainboard mounting size

All dimensions are in mm units, accurate to 0.1mm (Four positioning holes symmetrical).

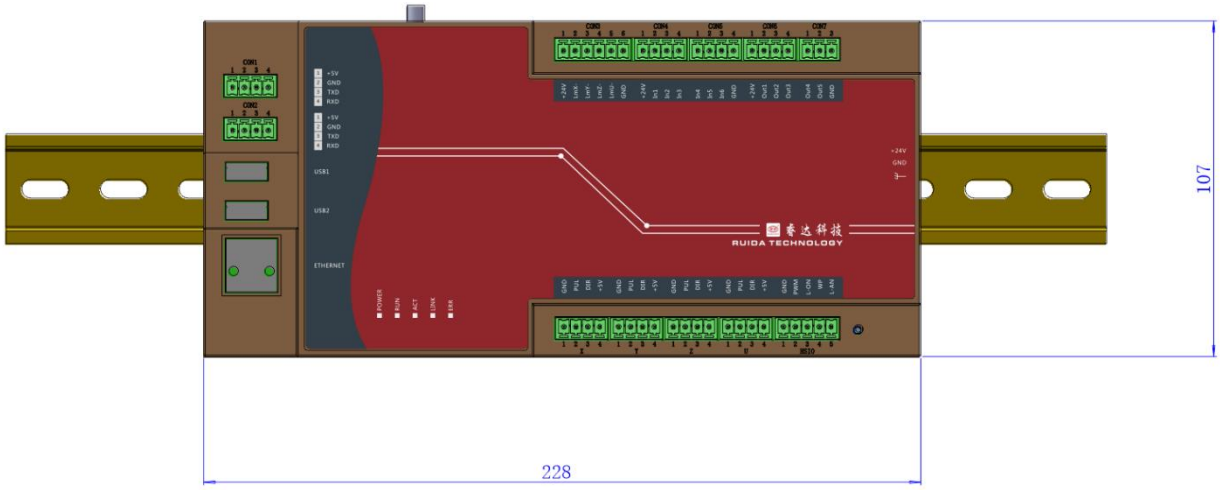


Figure 2.1.1 The top

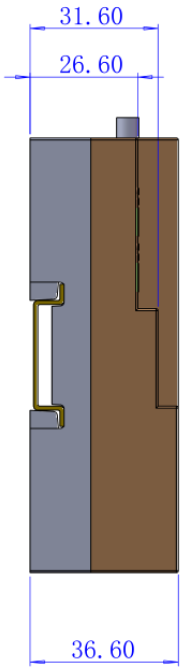


Figure 2.1.2 Left side

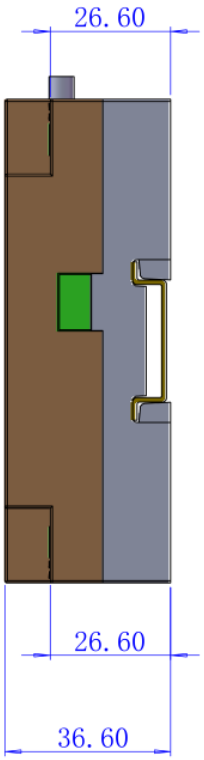
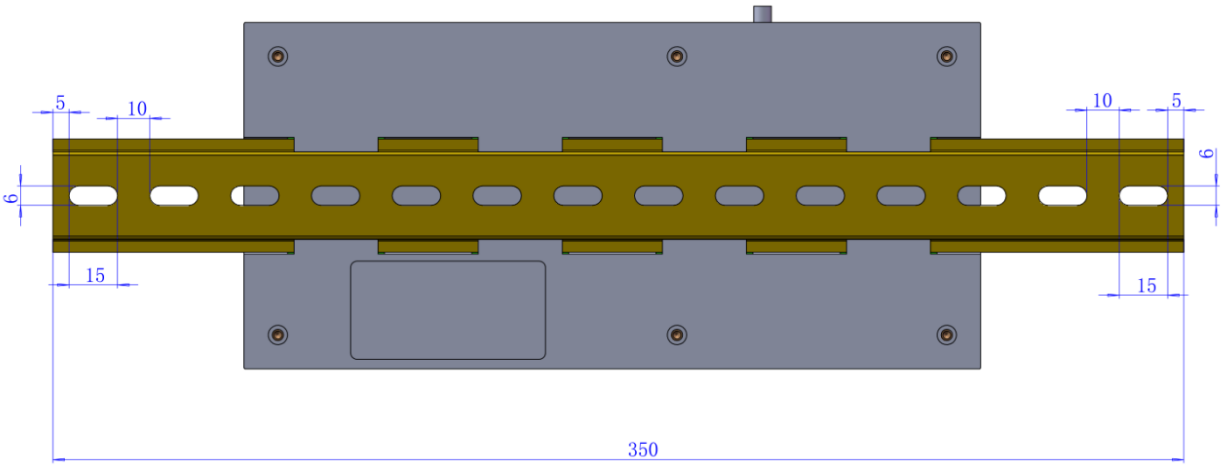


Figure 2.1.3 Right side



2.1.4 The Back side

2.2 Touch screen Mounting size

All dimensions are in mm, precise to 0.1mm

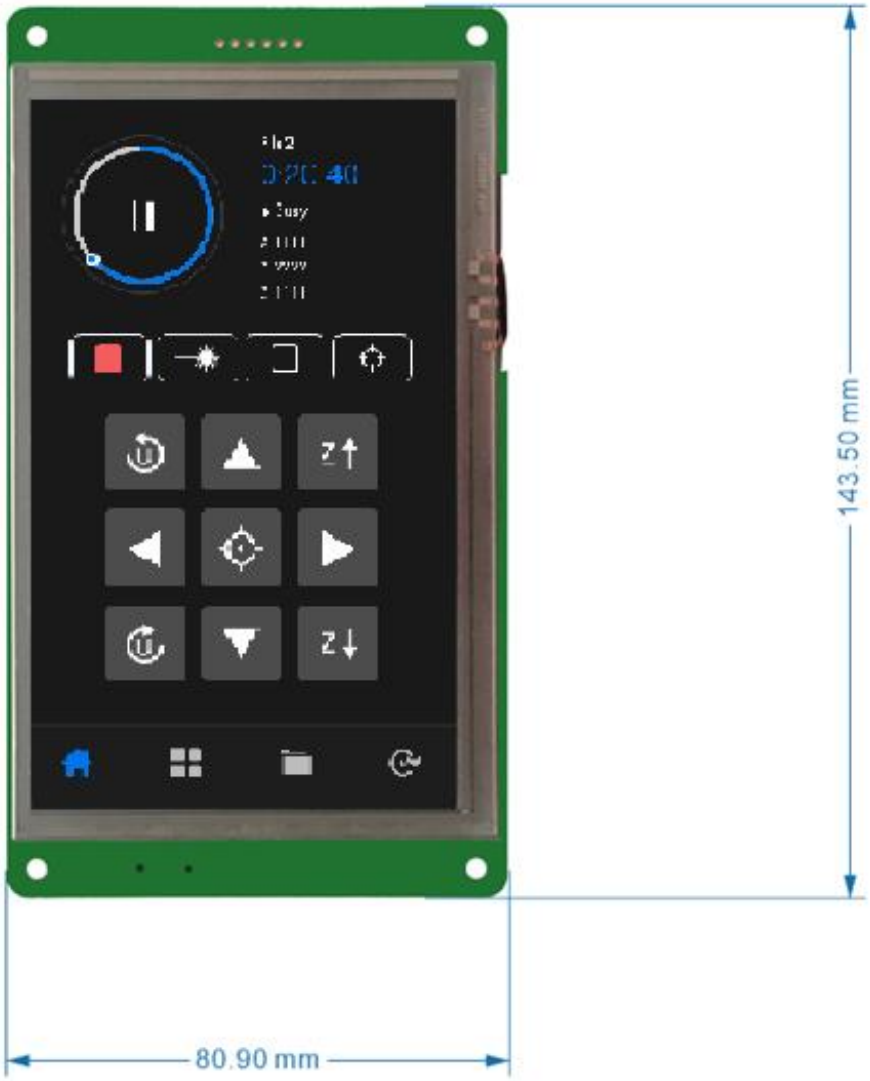


Figure 2.2.1 Front view

Figure 2.2.2 Back view

Chapter 3 Diagram and interface

The main contents of this section:

- System wiring diagram
- Hardware interface description
- Motor wiring instructions
- Laser wiring instructions

3.1 Hardware interface diagram

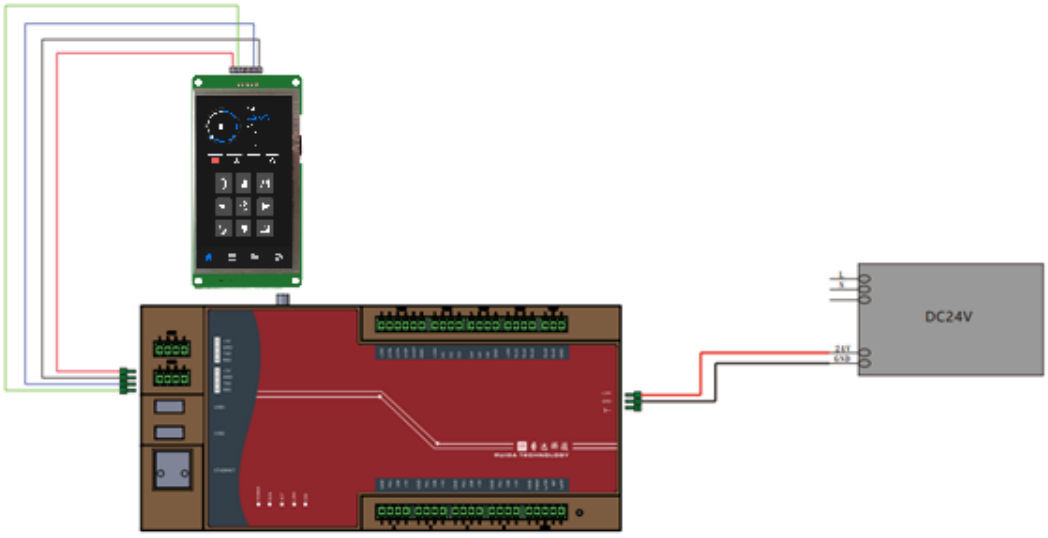


Figure 3.1 System wiring diagram

3.2 Main power interface CN4

PIN	Signal	Definition
1	+24V	24V switch power supply positive (input)
2	GND	24V GND
3	PGND	PGND

This control system uses a single 24V power supply, in order to leave a certain amount of margin, it is recommended to choose more than 24V / 2A power supply.

3.3 Limit switch interface CN1

PIN	Signal	Definition	Description
1	24V	24V power signal	Power signal
2	XLmt-	X-axis negative limit	Low voltage trigger
3	Ylmt-	Y-axis Negative limit	Low voltage trigger
4	ZLmt-	Z-axis negative limit	Low voltage trigger
5	Ulmt-	U-axis negative limit	Low voltage trigger
6	GND	GND	GND

1.The switch must select the NPN and the limit polarity can be optional. That is, if the motion axis reaches the limit position, triggers a low voltage signal, so that the corresponding LED of each limit is on, then the limit polarity is negative. Vice versa, if the movement axis is close to the limit when the corresponding indicator is off, and the corresponding light is on when the limit is left, the limit polarity is positive.

2.The system can select the back origin signal by parameters, the negative limit back to zero, or the origin back to zero.

3.If limit switches is insufficient, the limit switch recommends selecting a negative limit and using a negative limit back to zero.

3.4 Import interface CN3

PIN	Signal	Definition	Description
1	24V	24V Power supply	Power signal
2	IN-01	Foot switch	Specific input, foot switch input. The connection method is: when the pedal down, there is a low voltage signal, when the foot pedal is released, it is possible to disconnect the port or enter a high voltage signal. If the machine is in idle at this moment, will start to work, if the machine is in operation, the work will be suspended, and if the machine is suspended, the suspended work will be restarted, i.e. the foot switch and the "start/pause" key function on the keyboard are almost same. If

			the second foot switch is less than 100 milliseconds from the first, the second movement is considered invalid by the mainboard.
3	IN-02	Cover protection	Specific input to protect the signal input, and if the machine needs protection in a specific state (e.g. cover protection), protect signal from this pin input. The pin can be enabled and suppressed, when the pin is disabled, the signal is not queried by the mainboard, if the pin is enabled, the machine is protected when the input is high or the input is suspended, work in progress is suspended, and the laser is turned off.
4	IN-03	External pulse	Specific input, laser hardware pulse switch input, when connected to low voltage, laser pulse, if in high voltage, it cannot process this operation.
5	IN-04	External stop	Specific input, external stop switch input, when in the low voltage, it can be used to terminate the current movement.
6	IN-05	Smoke alarm	
7	IN-06	Temperature alarm	
8	GND	GND	GND (output)

1.All input interfaces are triggered at a low voltage.
2.When the system enables water protection, cover protection, the processing process will detect whether the external protection signal is effective in real time. There will be alarm when the external does not send a low voltage input signal.

3.5 Output interface CN2

PIN	Signal	Definition	Description
1	24V	24V power signal	Power signal

2	OUT1	Fan interface	Specific output, when enable fan control, it is the fan output control signal, otherwise it is the first pen control signal. When connecting the fan and fan control enable, the fan switch can be set in each layer, if connect the external relay, the relay coil will be turned on when the fan is turned on, and the relay coil will be turned off when the wind is turned off.
3	OUT2	The working state interface	Specific output, working status signal port (or second pen signal). When in the working status signal, if connect the port external relay, if an external relay is connected to this port, the relay coil is turned on when working, and there is no effect when the work is suspended. When the work ends or is canceled manually, the relay coil is turned off.
4	OUT3	General output	Reserved
5	OUT4	General output	Reserved
6	OUT5	General output	Reserved
7	GND	GND	GND (output)

3.6 Four-axis drive interface CN5-CN8

PIN	Signal	Definition	Description
1	GND	GND	
2	STEP	Pulse signal	
3	DIR	Direction signal	
4	5V	Power signal	

The four motion axis interfaces definition are same.

3.7 Laser control signal interface CN9

PIN	Signal	Definition	Description
1	GND	GND	
2	LP-DO	Laser power control	PWM output, with LP-AO two choices
3	LP-EN	Laser enables	IO control
4	Water	Water protection input	24V input detection
5	LP-AO	Laser power control	5V analog output

3.8 Communication interface CN11-CN12

PIN	Signal	Definition	Description
1	5V		
2	GND	GND	
3	TXD	RS232_TX	Serial communication TXD signal
4	RXD	RS232_RX	Serial communication RXD signal

Note: The panel port of CN12 is the panel interface.

3.9 Ethernet interface

Ethernet is an Ethernet interface and is not available.

3.10 USB interface

CN13-CN14 is a general USB interface

Chapter 4 HMI Introduction

The main contents of this section:

- HMI function Introduction
- HMI operation Introduction
- Parameters Description

4.1 Introduction

RDPAD8840G-MOD5-General -5 inches touch screen panel ("Panel") is a 5 inches touch screen based on the human-machine interface, with friendly UI. Support location and processing status display in real-time, users can clearly understand the current processing situation. Support modifies the file management, user parameters and factory parameters modification, support multi-language.

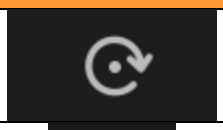
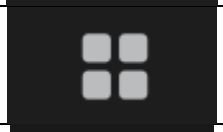
Figure 4.1

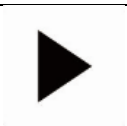
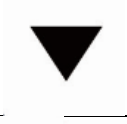
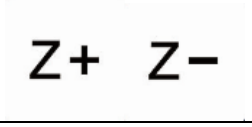
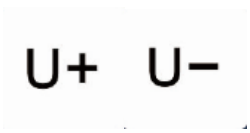
Panel features:

- 5.0-inch touchscreen
- 800×480 resolution

- 16.7Mhue
- MODBUS protocol communication
- buzzer

4.2 Introduction to the main interface features

serial number	Keystrokes	function
1		System Hardware Reset
2		Start work or pause/restart work
3		Stop machining or motor shaft movement
4		Memory file and USB stick file management
5		User parameters, factory parameters, language settings, etc
6		Point out light
7		Set the anchor point
8		Take a border-off operation on the current processing file
9		Frame for the current processing file

10		Used to move the X-axis
11		Used to move the X-axis
12		Used to move the Y axis
13		Used to move the Y axis
14		Used to move the Z-axis
15		Used to move the U-axis

4.3 The main interface functions

The main interface is displayed when the system power reset is complete. Here's the picture:

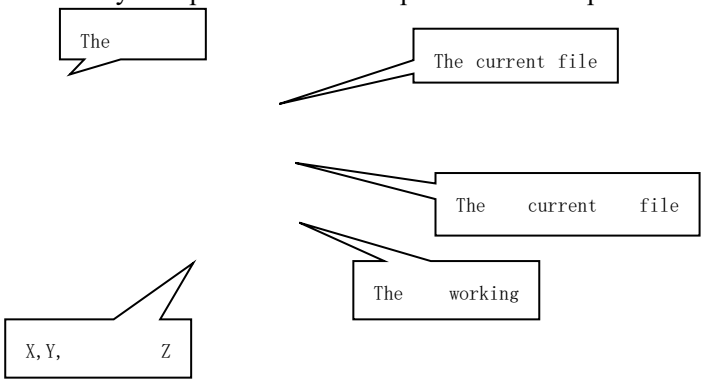


Figure 4.2

Current file name display: Displays the file name of the current processed file.

Working status area: Used to display the current working status of the system, respectively, idle, pause, complete, run. The time of processing is shown on the right.

Process progress bar: Show the current processing progress, the bottom left of the progress bar shows the percentage of processing progress.

In the running/pause state, some buttons do not respond, such as Pulse button, Frame keys, axis movement button, etc.

4.4 file

Press the File button on the main interface to enter the file management interface

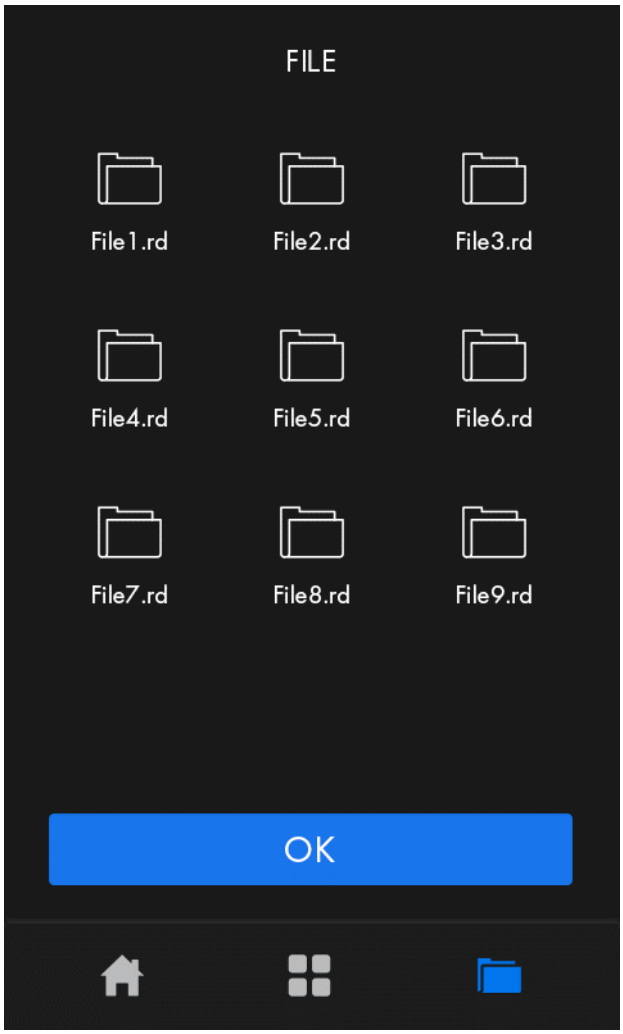


fig 4.4.1

The current page file number, along with the file number and file name, is displayed in this interface, clicking on the icon to turn the page, clicking on the file to select, and press 'OK' ,The maximum number of files is 100.

4.5 Menu

Press the Menu button on the main interface, as shown in the figure

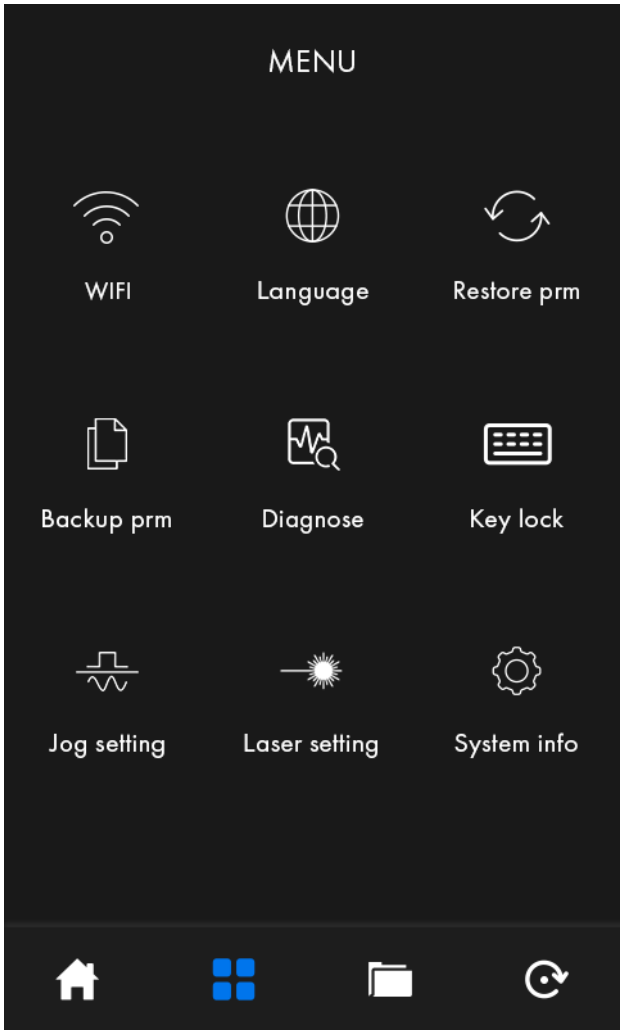


Figure 4.5

4.5.1 WIFI

Press ‘WIFI’, the following dialog box pops up

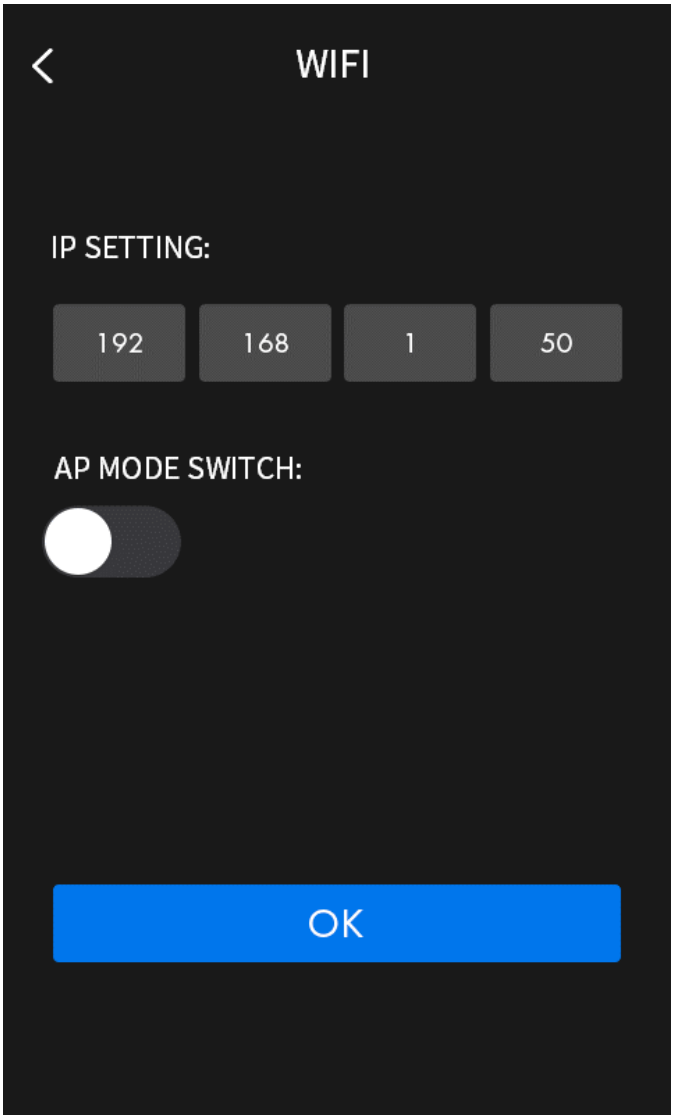


Figure 4.5.1

When entering the interface, the card's current IP address will be read, user can modify the host IP address, if the AP mode is off, the modification is successful, if the AP mode is on, it is not allowed to modify.

4.5.2 Language settings

Press the ‘Language’ , the following dialog box pops up

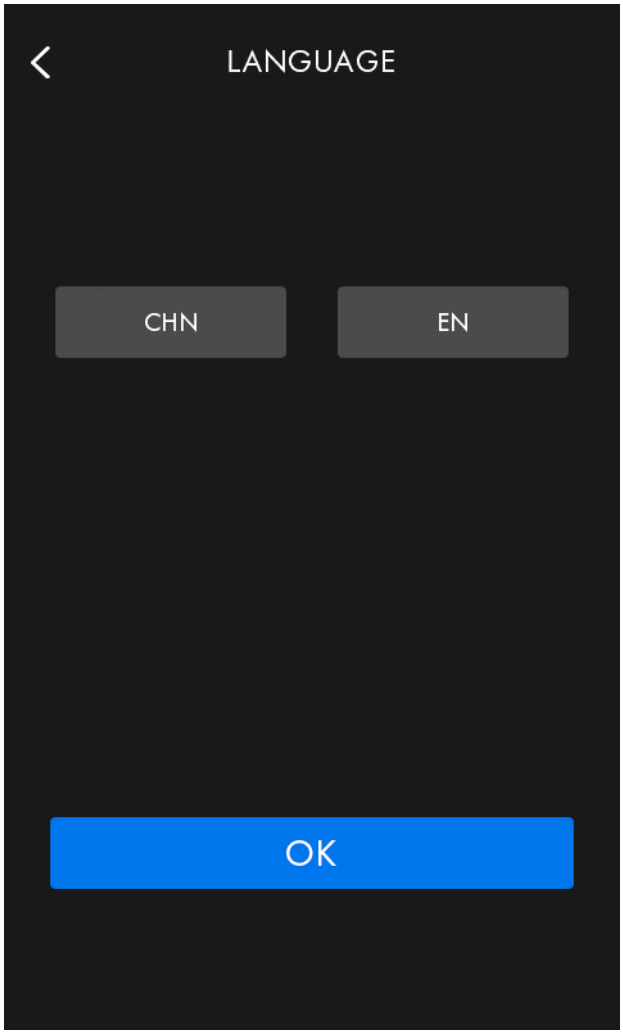


Figure 4.5.2

Enter the Language interface, and the gray box represents the language currently in using. Select the language, press 'OK' to confirm.

4.5.3 Backup Parameter

Pressing the 'Backup Prm', the following dialog box pops up:

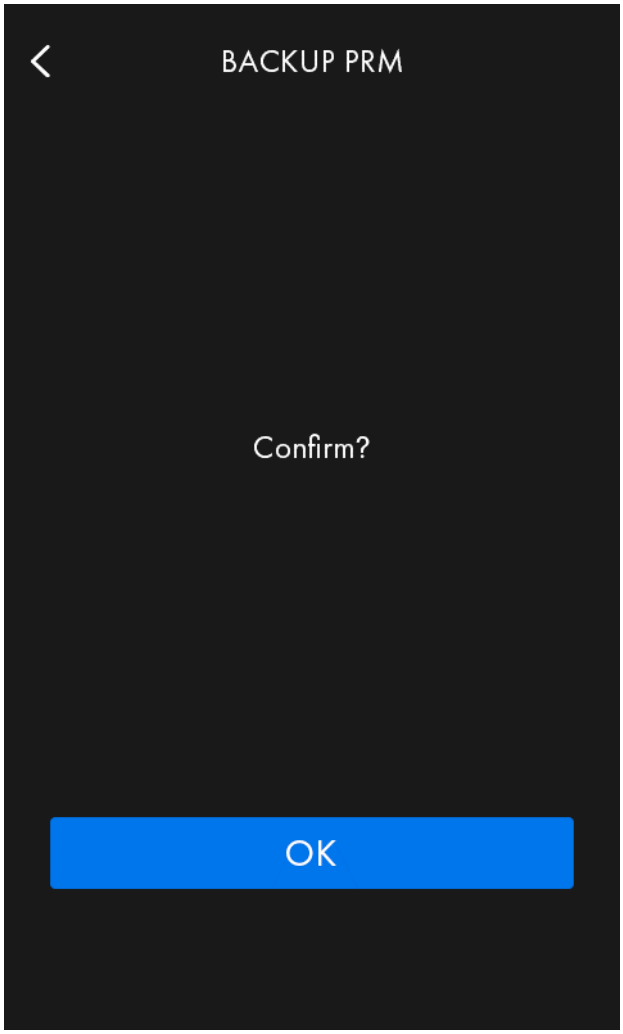


Figure 4.5.3

Press ‘backup prm’ to backup the manufacturer parameters and user parameters in the board.

4.5.4 Restore parameters

Press the "Restore prm", and the following dialog box pops up:

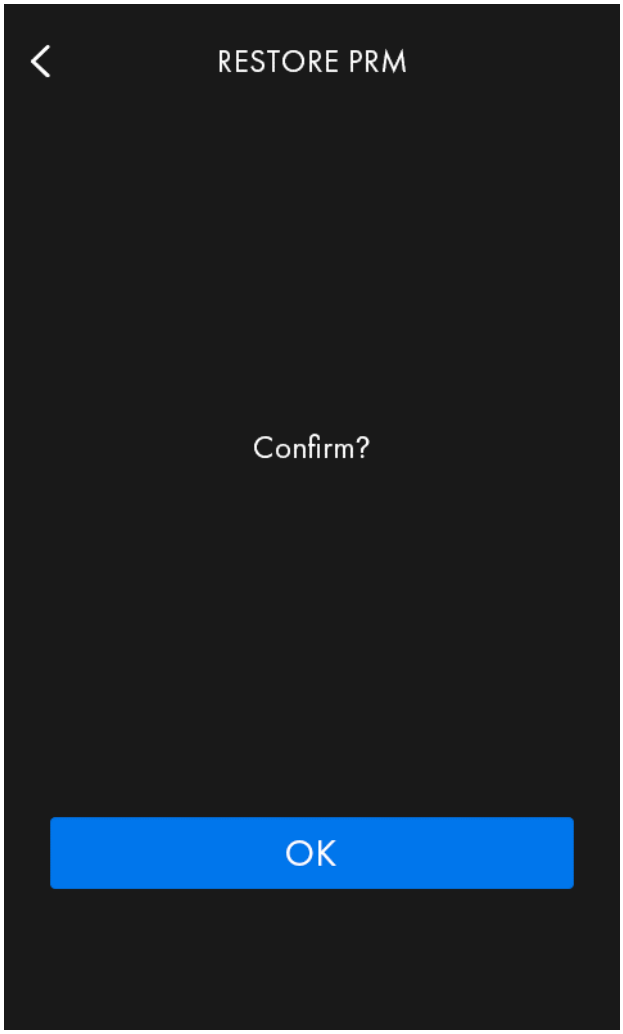


Figure 4.5.4

Click to confirm that the factory parameters and user parameters in the memory chip of the control card are backed up for restoration.

4.5.5 System information

Pressing the ‘System Info’ , the following dialog box pops up:

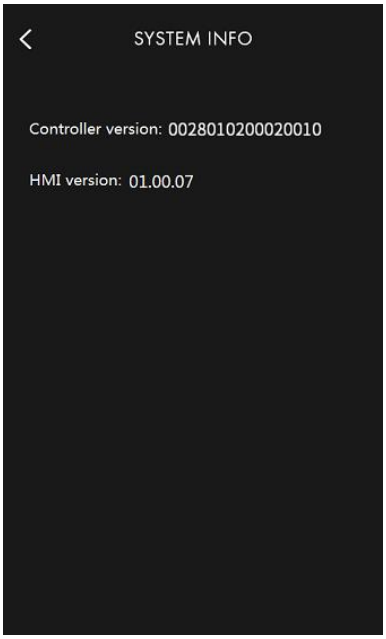


Figure 4.5.5

Here will display the version number of the control card.

4.5.6Jog setting

Press ‘Jog setting’ , the following dialog box pops up:

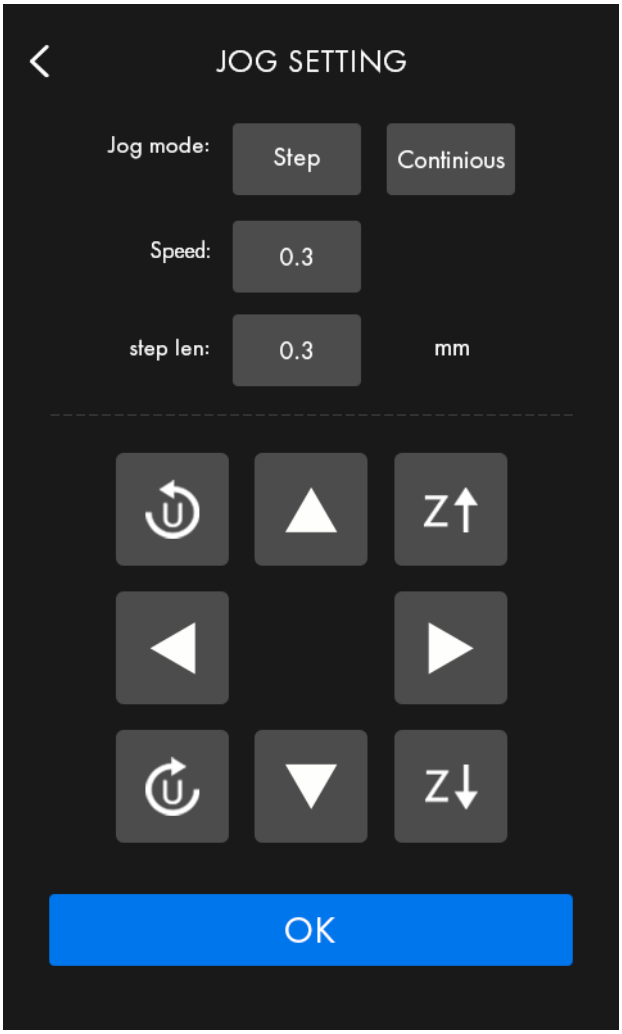


Figure 4.5.6

Definition	Description
Jog mode	When the Jog mode is Continuous, the step distance does not work, when press the arrow button, the axis moves, when release, the axis stops moving. When the mode is in 'step', the corresponding motion axis can move one of 'step len' when press the arrow button, the 'step len' can be set according the machine breadth.
Step len	When the mode is in 'step', the corresponding motion axis can move one of 'step len' when press the arrow button, the 'step len' can be set according the machine breadth.

4.5.7 Laser setting

Press ‘Laser setting’, the following dialog box pops up:

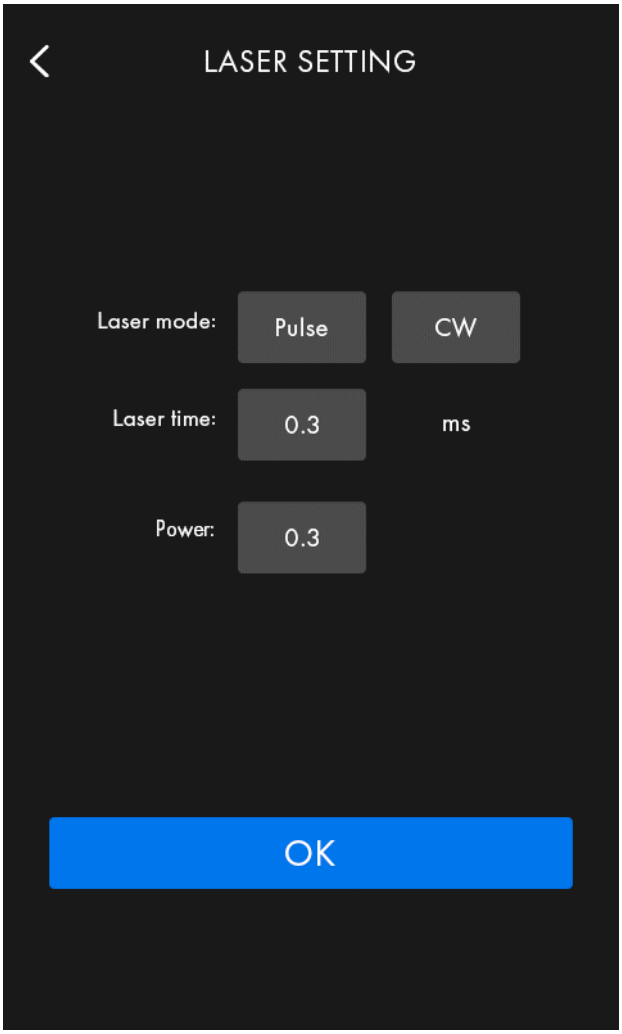


Figure 4.5.7

Definition	Description
Laser mode	When the laser mode is in ‘CW’, the laser time parameter does not work, at this time press the "pulse”, the laser on in continuation, until release the "pulse".When the laser mode is in "pulse", Then press ‘Pulse’, the laser on automatically until the laser time was set.
Laser time	When the laser mode is in "pulse", Then press ‘Pulse’, the laser on automatically until the laser time was set.

4.5.8 Diagnose

Press ‘Diagnose’, the following dialog box pops up:

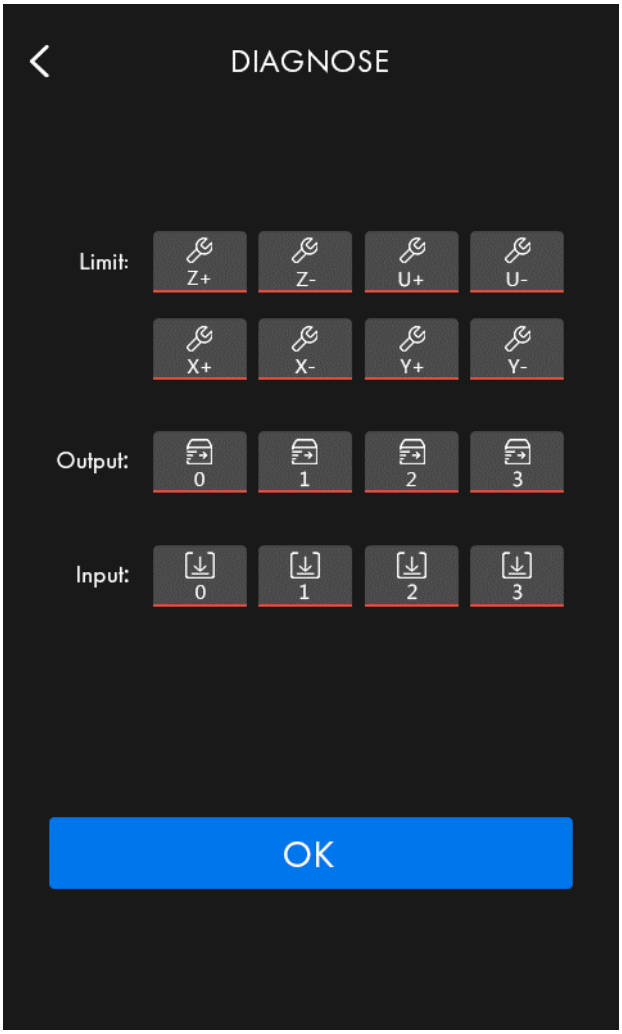


Figure 4.5.7

From the "diagnosis" interface, display the hardware IO port information of the system, enter the interface to read the system hardware information, wherein, X-/Y-/Z-/U- for each axis limit signal input, the output 2/3/4/5 corresponding to the mainboard on the Out2/ Out3/ Out4/ Out5. Enter 1/2/3/4/5/6/7 corresponding to the mainboard in 2/In2/In3/In4/In5/In6/Wp.

Press ‘OK’to return to the parent menu.

4.6 Keyboard Lock

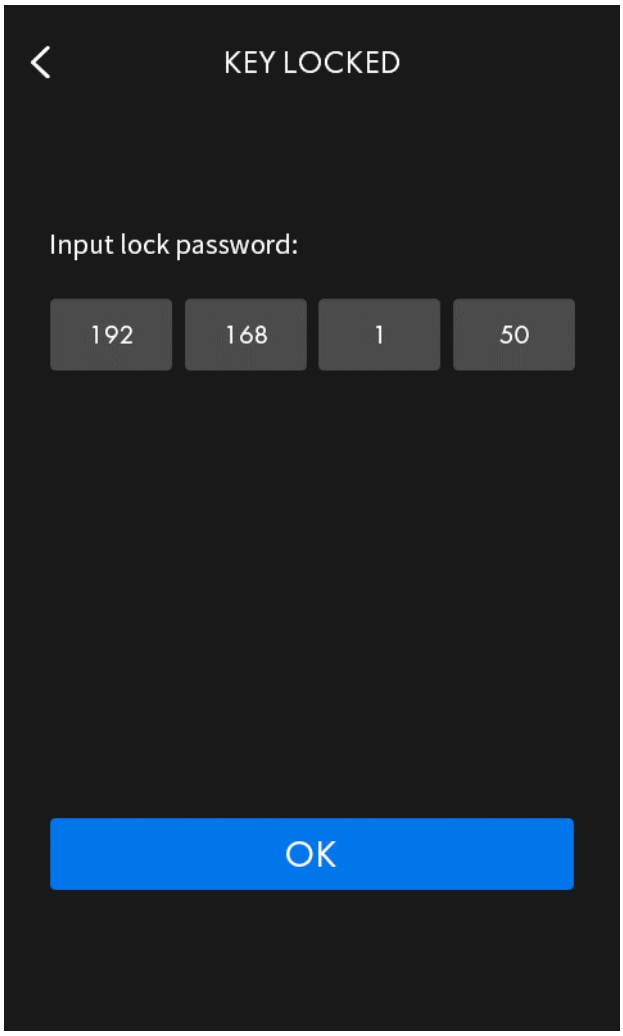


Figure 4.6.1

When press ‘Key lock’, input the lock password, press ‘ok’, there will be the locked main interface. When you enter the locked main interface, parameters such as: "Current process file," "Process progress," "Processing time” can display, user should unlock then can operation. If the password is wrong, back to the locked main interface.

Chapter 5 System debugging

The main contents of this section:

- XY axis motion testing instructions
- Laser testing instructions
- Processing testing

5.1 X, Y-axis debugging

Be careful when user the first time to running the system, here is the steps:

1) Before connecting the motor driver, set the user parameters, vendor parameters of the mainboard from software correctly, especially the work speed, motor step length, offset etc. to keep safety.
2) Check the logic voltage of the limit switch from touch screen 'diagnostic' interface, manually trigger the limit switch to check whether it is valid, and then set the limit switch polarity correctly in the vendor parameters of the software.
3) Connect the motor cable correctly and set the drive parameters according to the motor driver model.
4) After the parameters are set correctly, connect the motor and drive, power on the system, move the XY axis manually to check if XY can move properly, and if the axis cannot move, check the connection, the mianboard parameters, and the drive parameters.
5) Move the XY axis manually to see if the XY axis movement is consistent with the direction button from the touch screen, if the motion is inconsistent, click' revert direction' from vendor parameters of the software.
6) Test X, Y step length.
7) If all of the above procedures are correct, next tests can be performed.

5.2 Laser testing

1) Connect the laser wiring correctly.
2) Set the pulse parameters according to the laser instructions, press the "Pulse" button on the screen to check the laser on properly. Modify the pulse power and frequency to check if it is effective, and the user can adjust the optical path during testing. If the laser is always on, it is possible that the laser has an incorrect effective voltage setting, at which point the switch signal level in the is modify laser parameters from the

manufacturer parameters in the software.

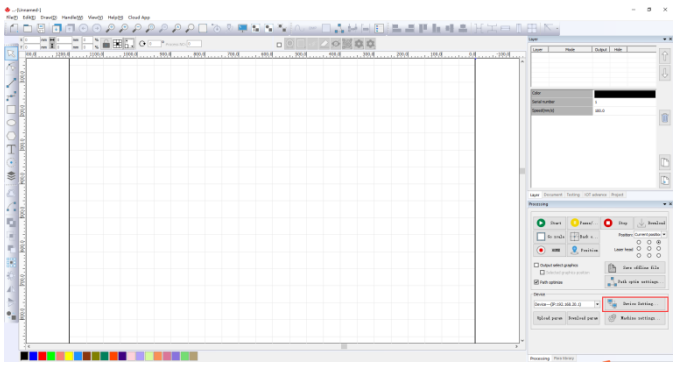
3) If all of the above procedures are correct, next tests can be performed.

5.3 Cutting testing

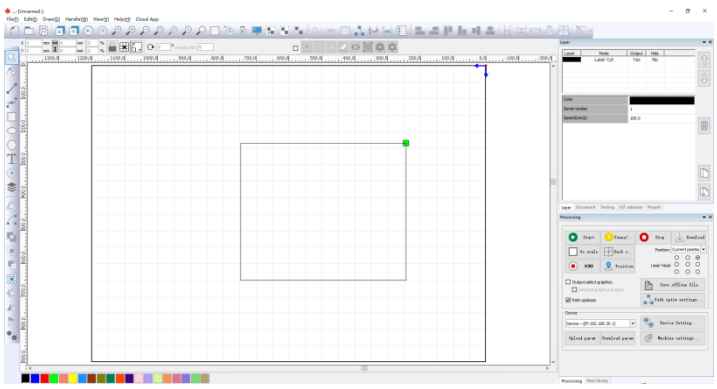
Before cutting test, make sure that the wiring is correct and that the controller parameters are set correctly, that the X, Y-axis motion and laser testing is normal and the system have been reset successfully. For software using, please refer to the RDWorksV8Lite software user manual for details.

Here is steps :

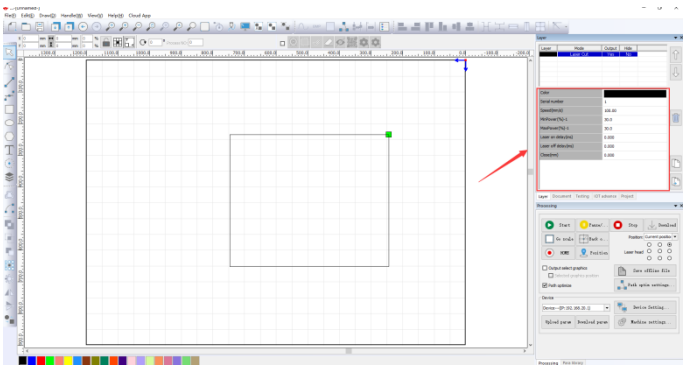
1) Open RDWorksV8Lite software, click on the 'Device setting' option in the lower right corner of the software to find the corresponding device, please refer to Chapter 7 Device Connection Instructions for more details.



2) On the left side of the software, draw a simple drawing with drawing tools, taking rectangles as an example:

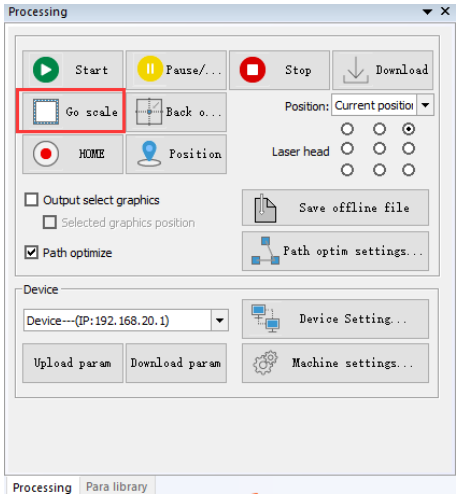


3) Set the layer parameters correctly



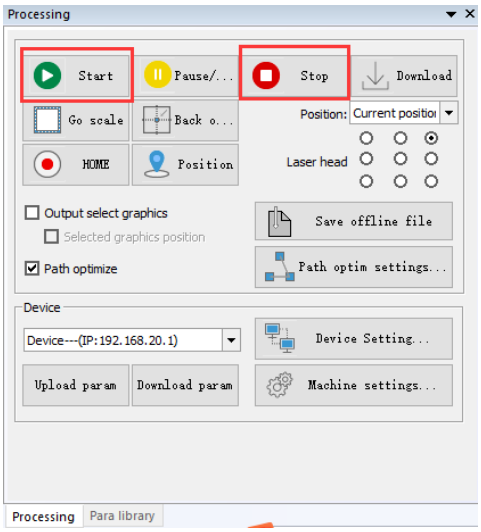
4) Scale

On the right side of the software interface, press the ‘go scale ‘button and the laser head moves along the maximum rectangular boundary of the machined graphic. This feature allows you to understand the actual processing, and if the panel prompts the border to cross the line, it means that the cutting head movement will exceed the rectangle range, so stop to running ensure the safety.



5) Start cutting

When the functional tests are normal, on the software interface, press the ‘Start’ button to start cutting and the ‘Stop’ button to stop the processing.


Processing
Start
Pause/...
Stop
Download
Go scale
Back o...
Position:
Current positio
HOME
Position
Laser head
Output select graphics
Selected graphics position
Save offline file
Path optimize
Path optim settings...
Device
Device---(IP:192.168.20.1)
Device Setting...
Upload param
Download param
Machine settings...
Processing
Para library

Chapter 6 Alarm Information Description

The main contents of this section:

- Alarm information description
- Alarm solutions

6.1 Alarm information description

An alarm may be raised during the operation and the corresponding protective action may be generated to protect the machine. Alarm information includes limit trigger, cover protection, high temperature alarm, smoke alarm, etc. When an error occurs, the error is prompted on the touch screen. If an error occurs, please deal with the error based on the error prompt and then run the system.

6.2 Limit trigger

When the limit enables, the limit trigger is displayed when the limit switch is triggered. If the limit switch is not triggered and the limit trigger is still displayed, please check:

- Limit polarity setting error, please modify the limit switch polarity;
- Limit switch wiring is not correct, please wiring correctly;
- If the limit switch is damaged or the limit switch output voltage is incorrect, replace the limit switch;

6.3 Temperature alarm, smoke alarm, cover protection

In the vendor parameters to enable temperature alarm, smoke alarm, cover protection, when the mainboard corresponding interface detected as high or suspended, there will an alarm, if in the processing, will suspend processing. If processing needs to continue, deal with the alarm first, and then continue the processing, otherwise the processing will stop.

6.4 The border crosses the line

When start the process, pop up a hint that the border is out of bounds. Please check:

- Process graphics exceed the maximum format of the machine. Make sure that the cutting shape is smaller than the maximum of the machine.

- The vendor parameters are not set correctly and the XY axis breadth does not match the actual frame of the machine. Set the XY face correctly.

6.5 Mainboard communication failed

When communication failures during using, please check:

- The connector between the touch screen and the mainboard is not connected correctly.
- The connector terminals between the touch screen and the mainboard are not in connect properly.
- The connector between the touch screen and the mainboard is damaged. Please replace the new cable.
- The mainboard has the problem. Check that the mainboard 'Run' light is flashing properly, power.
- The mainboard or touch screen hardware interface has failed.

Chapter 7 Device Connections

The main contents of this section:

- PC and device connection
- Connect the device through the router

7.1 PC and device connection

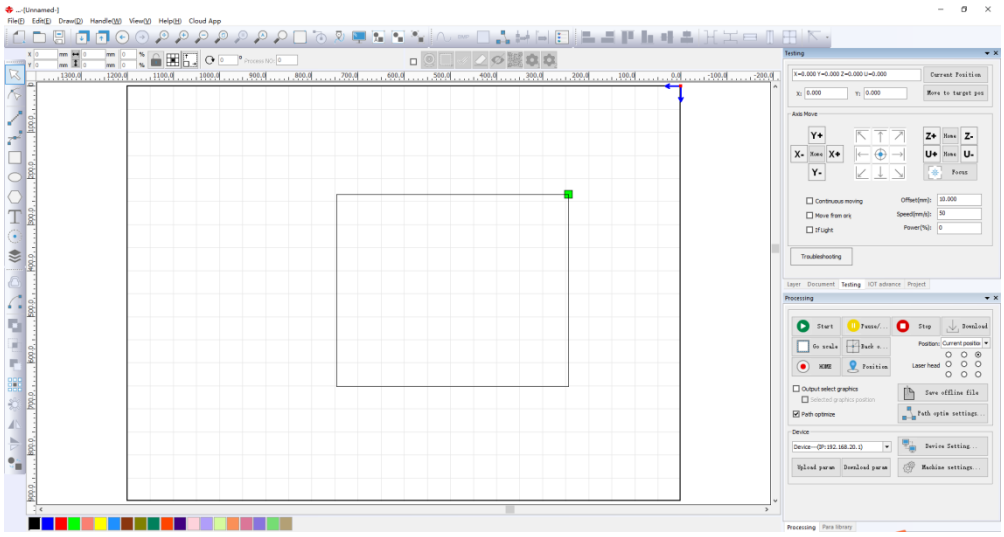
The PC search for wifi from the device, to connect the corresponding device directly. Here requires the PC has the wifi function.

7.1.1 The connection step

The specific connection steps are as follows.

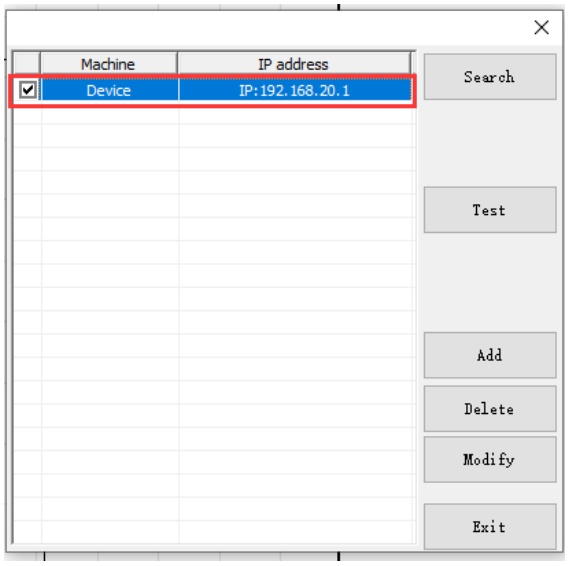
1) The device is powered on.

2) Double-click RDWorksV8Lite to start the software as shown below.

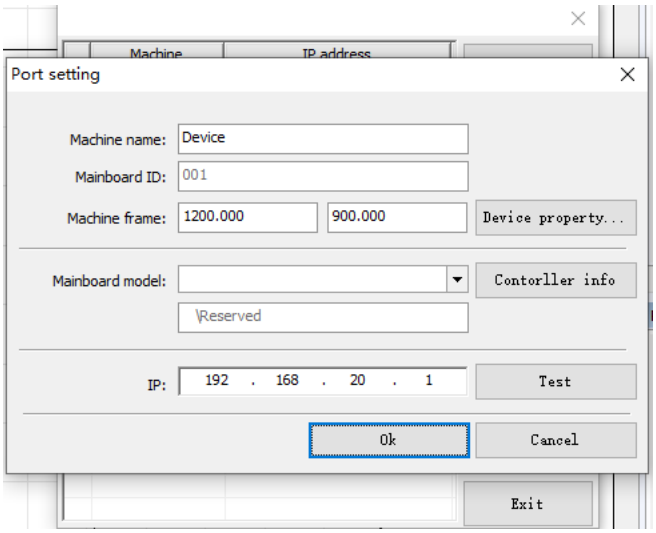


3) The computer connect the mainboard (each controller has different wifi name ,which can be viewed at a label on the mainboard, and the desktop computer needs to connect to the W IFI module to connect)

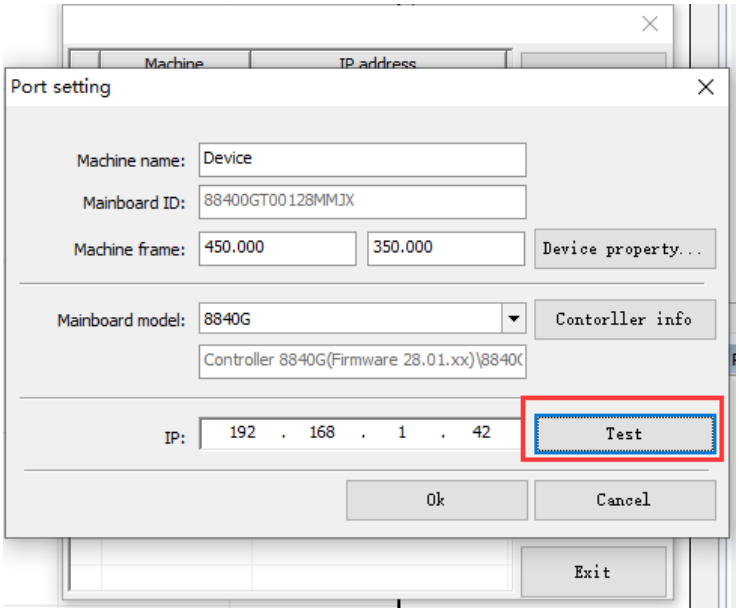
4) Once the connection is successful, click the Device setting on the V8lite software and the following display box will pop up.



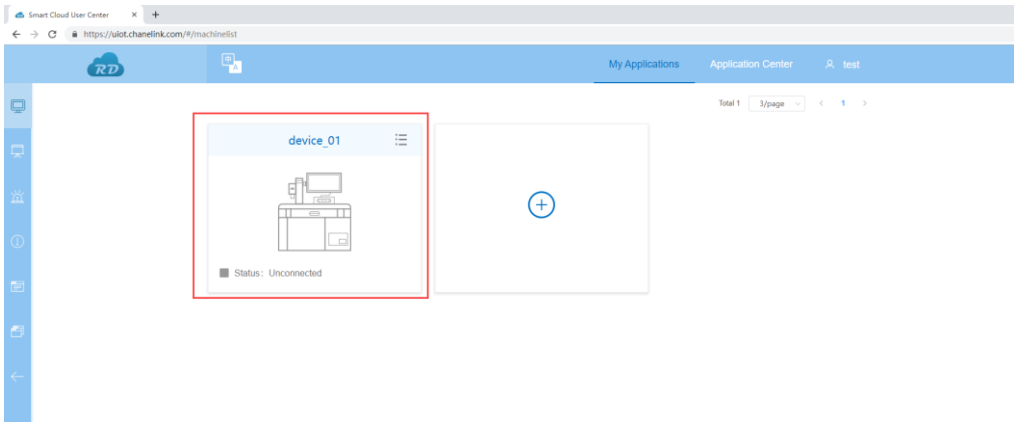
5) Double-click 'Device' (default connection IP is 192.168.20.1 when single connecting).



6) Click "Test" to pop up the "Port Test Success" box to indicate that the software is connected to the device (if the " Port test failure" ,user should be check if the computer and device WIFI is connected successfully and if IP is entered incorrectly).

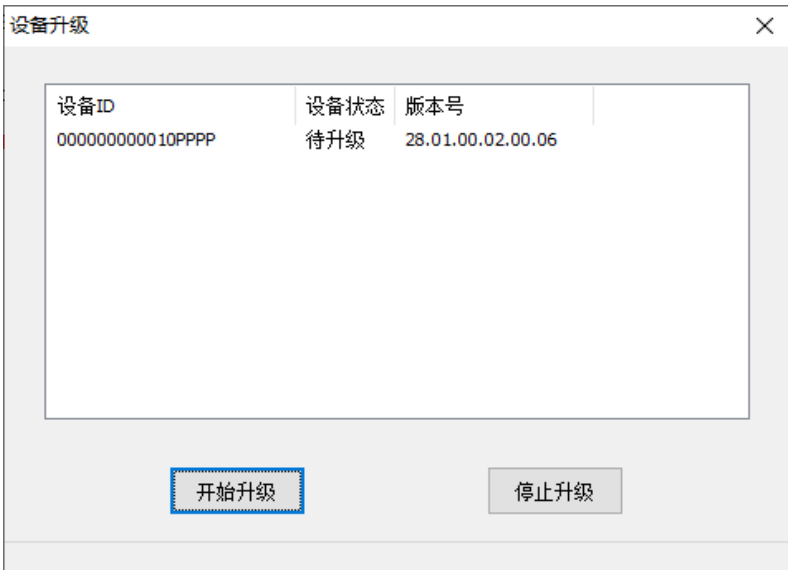


7) At this time, if the computer is connected to the external network, the device is also can connected to the Internet, production, shutdown, alarm information can be viewed on the web page.



The test device ID is"88400GT00128MMJX", you can see on the page that the device status is connected.

8) When a device is connected to the Internet, when we have the latest version released, we can right-click on the "RDMonitor" in the lower right corner of the computer and click on "Upgrade devices online" to see if the device needs to be upgraded.

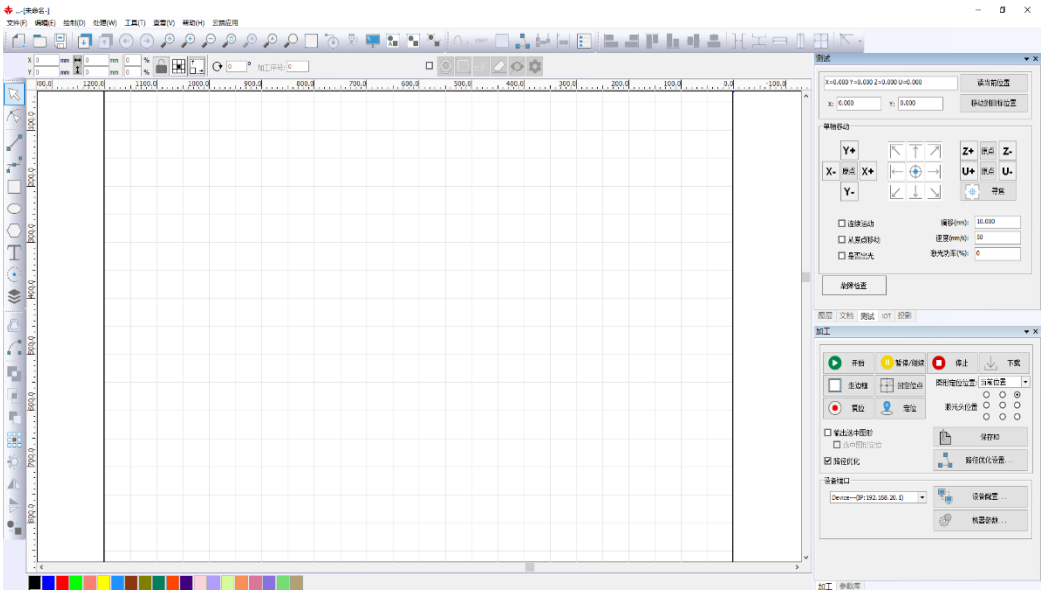


7.2 Connect the device through the router

The steps for connecting the mainboard through the router are as follows:

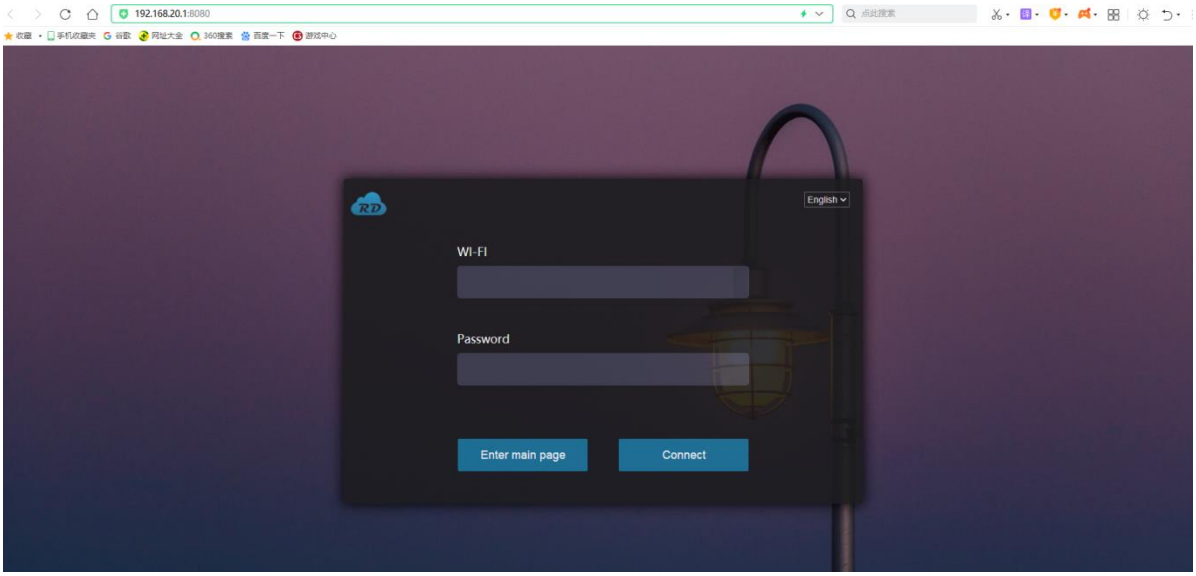
1) The device is powered on.

2) Double-click RDWorksV8Lite to start the software as shown below.

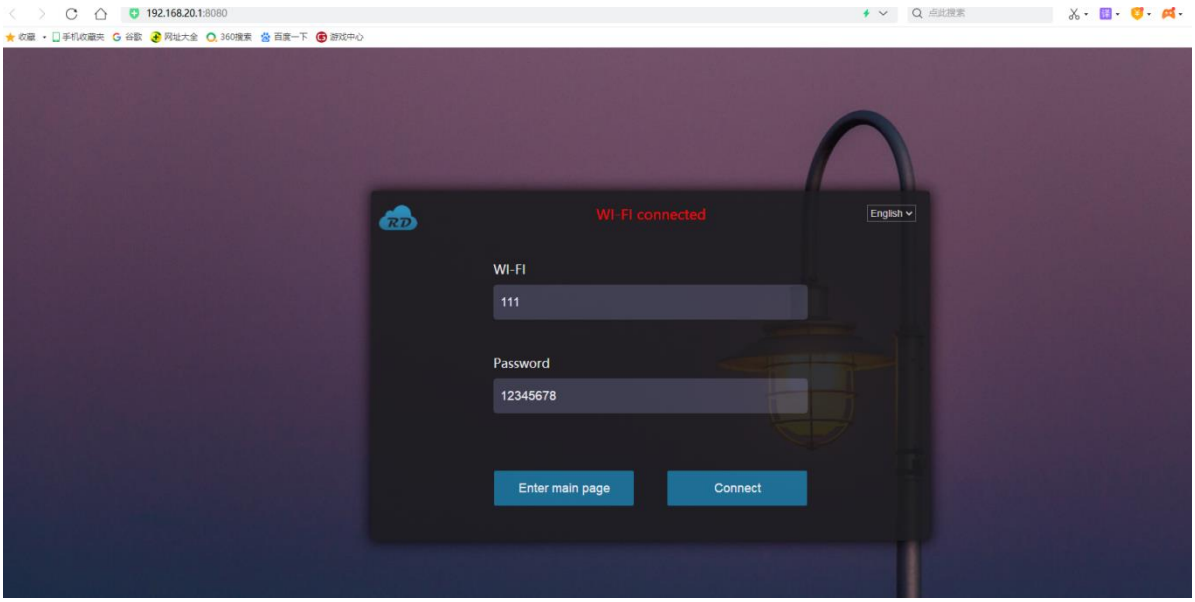


9) The computer connects the mainboard (each controller has different wifi name, which can be viewed at a label on the mainboard, and the desktop computer needs to connect to the W IFI module to connect)

3) After a successful connection, access "192. 168. 20. 1:8080"through browser:



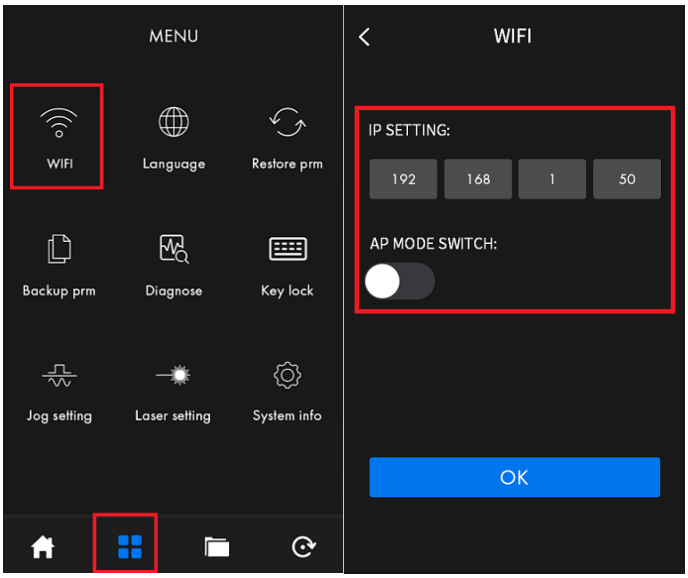
4) Enter the account number and password of outer, and then click Connect Now to connect the device to the router: (Note: If the account number or password entry error, the software cannot communicate with the device. User should back to re-press the WiFi 'OK' button on the touch screen to reconfigure WiFi).



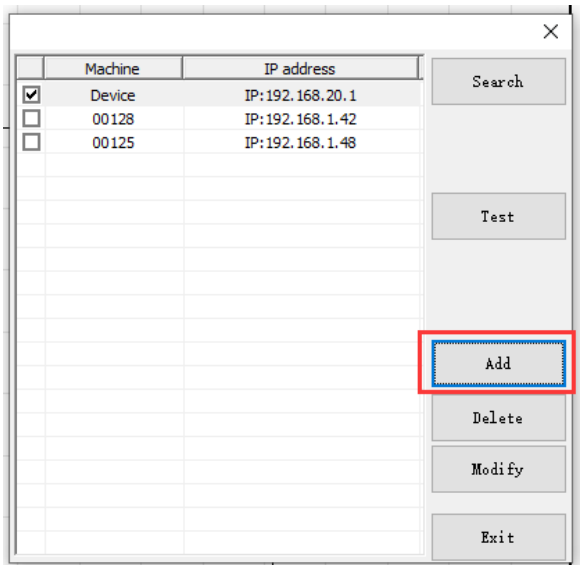
At this point, check the computer WIFI, and when the connected "device010"connection disappears, the device is connected to the router.

5) Make the computer connect into WIFI which from the device, as shown below.

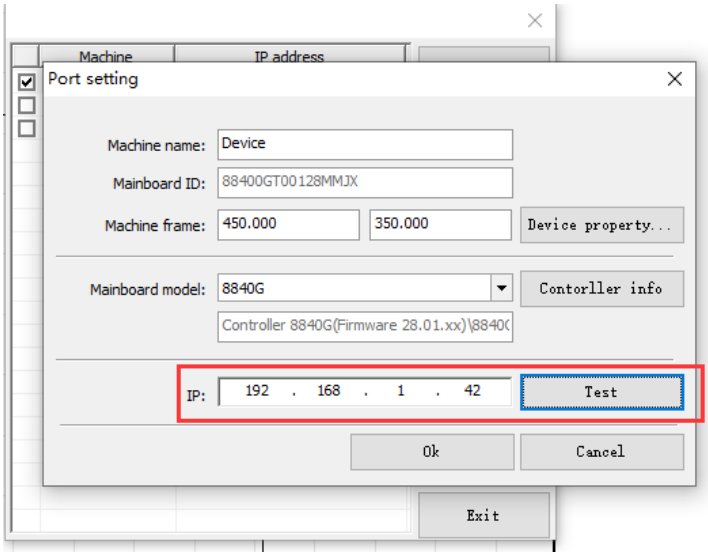
6) Once the device enters the router, it can view the :(assigned to the mainboard IP by the router through the touch screen. Note: At this point, user do not have to click OK to determine whether wiFi is reconfigured).



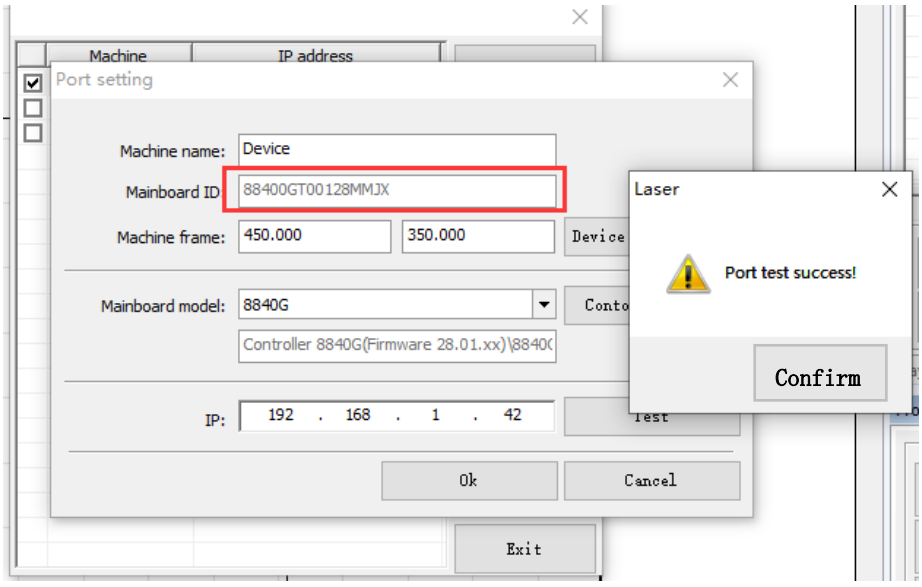
7) Open the V8Lite software, click "Device setting" and click the "Add" button in the pop-up interface.



8) In the pop-up "Port setting" interface, the IP address is modified to the IP displayed by the touch screen: e.g. 192.168.3.103, as shown below.



9) Click "Test" to pop up the "Port Test Success" box to indicate that the software is connected to the device (if the "Port test failure" to check that the computer such as device WIFI is successfully connected and if IP is entered incorrectly).

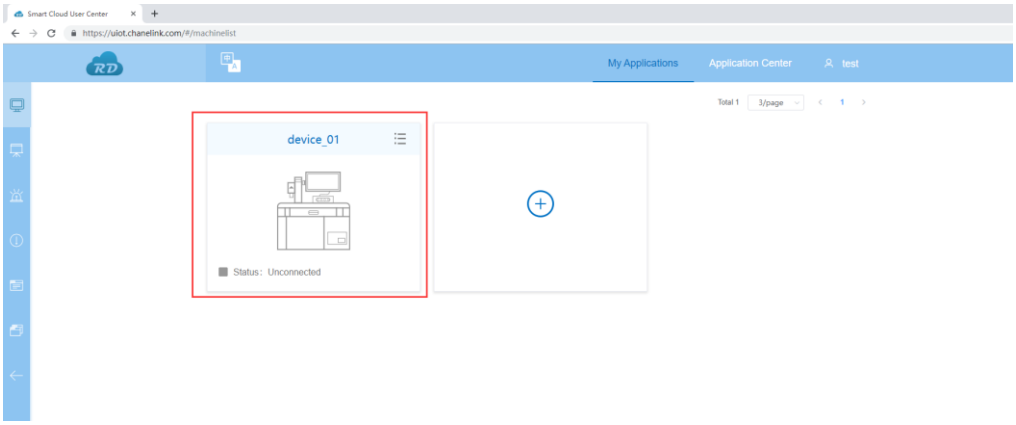


10) The computer connects the mainboard (each controller has different wifi name, which can be viewed at a label on the mainboard, and the desktop computer needs to connect to the W IFI module to connect)

The test device ID is"88400GT00128MMJX", you can see on the page that the device appears as a connection.

11)

When a device is connected to the Internet, when we have the latest version released, we can right-click on the "RDMonitor" in the lower right corner of the computer and click on "Upgrade devices online" to see if the device needs to be upgraded.



Chapter 8 RDCloud Application Description

The main contents of this section:

- RDCloud Introduction
- Page Features Introduction

8.1 RDCloud Introduction

RDCloud System Enables devices to access the Internet, and users can see different data from devices on the page.

This manual is the details of the user page client-side function.

（1） User Center

（2） Device management

（3） My profile

（4） Maintenance management

（5） Repair service

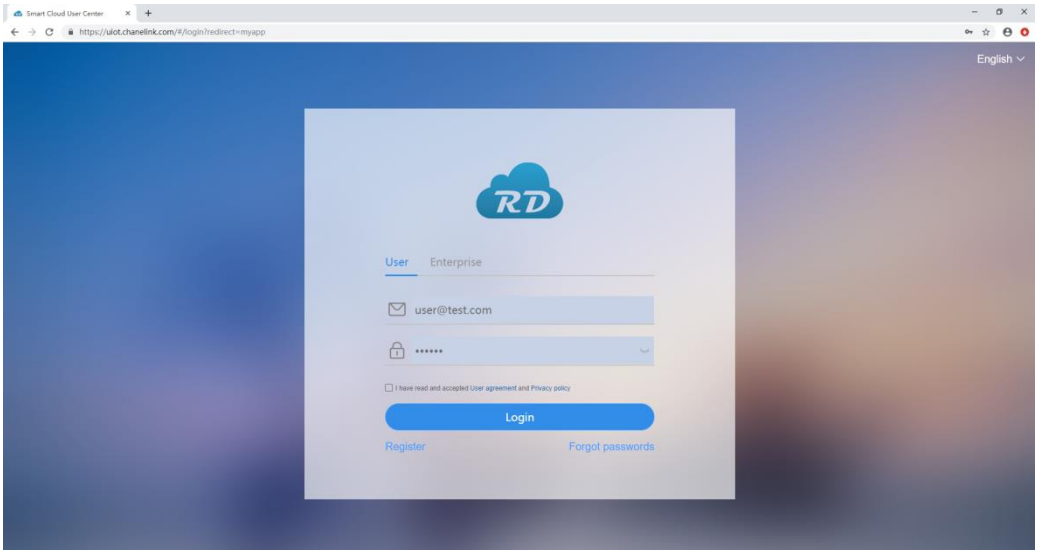
Where the device management module displays data as collected device data.

8.2 Page Features Introduction

Here is RDcloud system on the web side, which includes:
Login
Register
Reset the password
User Center
Device management
My profile
Maintenance management
Repair service

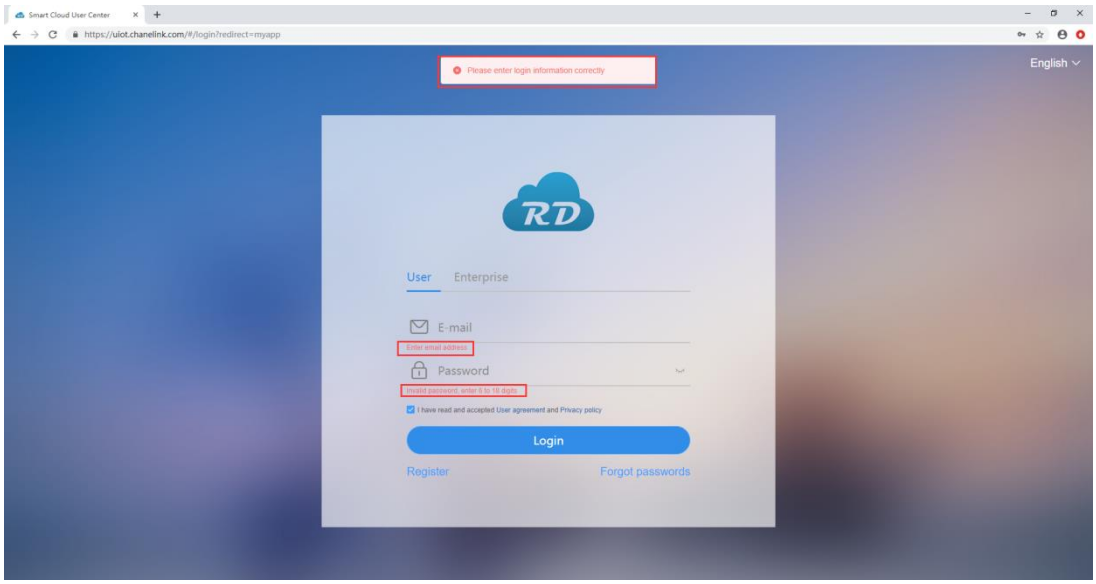
8.2.1 Login

By visiting the http://uiot.chanelink.com address, enter client-side login page, as shown below.



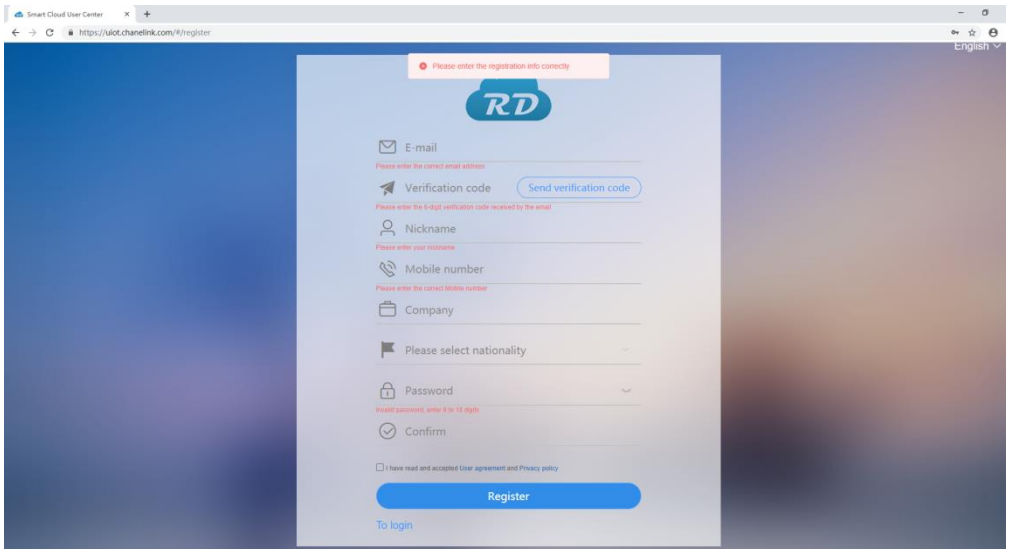
Enter the registered email and password such as:croco@nasa.com

After all the account numbers and passwords have been entered, click the login button, if the account password verification correct will jump to the user center, if the empty account password login account number or password error, account number does not exist will have the prompt on the page as following figure;



8.2.2 Register

If no registered account, click Sign up to jump to the registration page, as shown below.



· The first column: The account number, must be the mailbox.

· Second column: Click on the right to send verification code correctly

· The third column: enter the nickname correctly

· The fourth column: enter the contact phone number correctly

· Column 5: The company name correctly.

· Column 6: the country, has the drop-down option for choice.

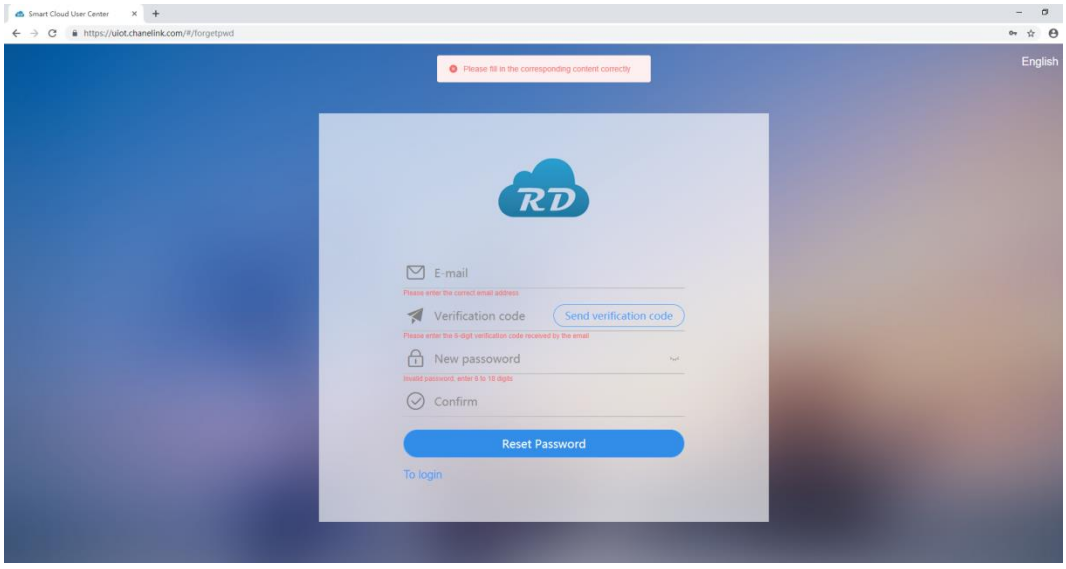
· Column 7: Password

· Column 8: Password confirmed

Once all the input meets the requirements, click the registration button and if this account already exists, it will be having prompt, and when the registration is successful, will enter the login page.

8.2.3 Reset the password

If you already have an account but have forgotten your password, click the Forgot Password button to enter to the Forgotten Password page, as shown below.



· The first column: enter the mailbox.

· Second column: click on the right to send verification code.

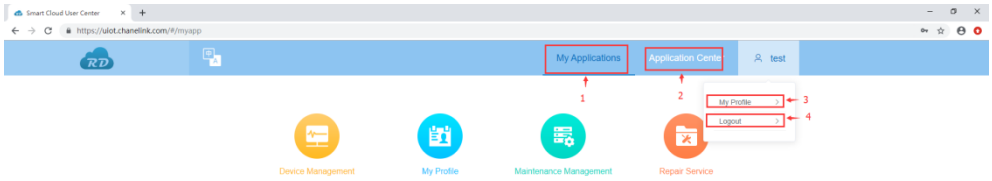
· The third column: Enter a new password.

· Column 4: New password confirmed.

Once all the input meets the requirements, click the registration button and if this account already exists, you will be having prompt, and when the registration is successful, will enter the login page.

8.2.4 User Center

Once signed in, enter the user center home page, as shown below.

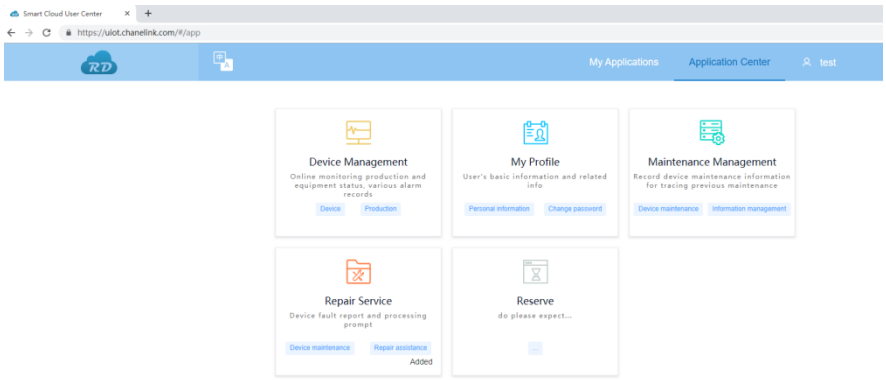


1: My applications, as shown in the image above, the user can add and cancel the application from application center.

2: Application Center, as shown in the following image.

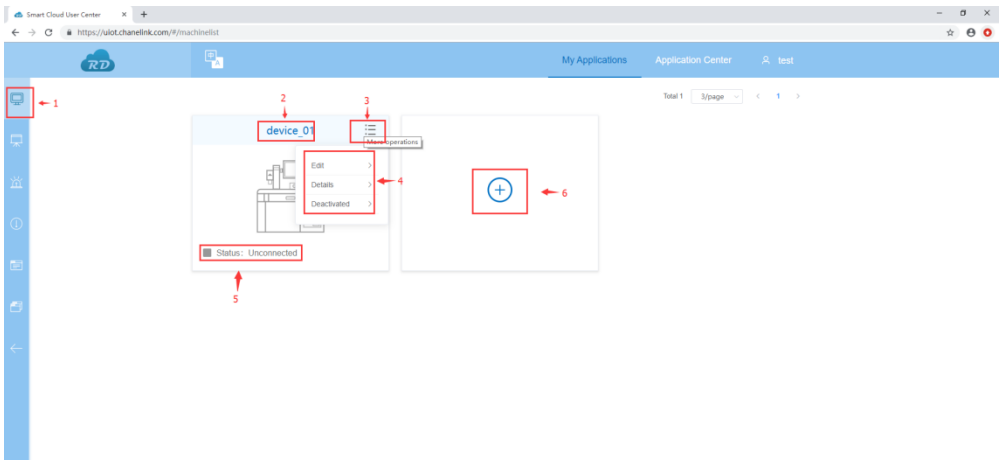
3: User nickname, click to enter my profile, user can modify the personal information.

4: Sign out, click back to the login page;



8.2.5 Device management

Click Device Management in my application and turn to the Device Management page, as shown below:



1: On the left is the menu bar, which opens the device monitoring page by default;

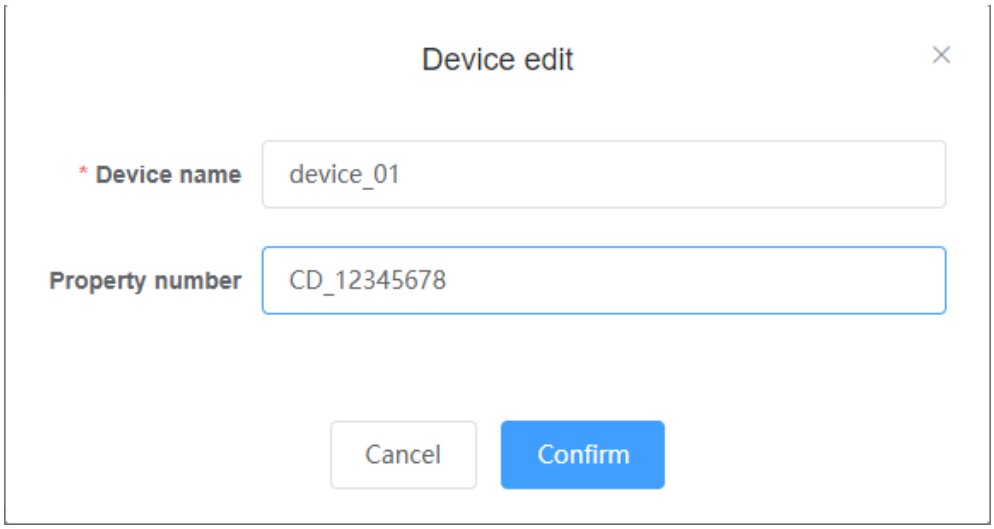
2: The device nickname.

3: The connection status of the device, showing network connection info.

4: List of device operations.

5: The device operation list has editing, details and un-binding function;

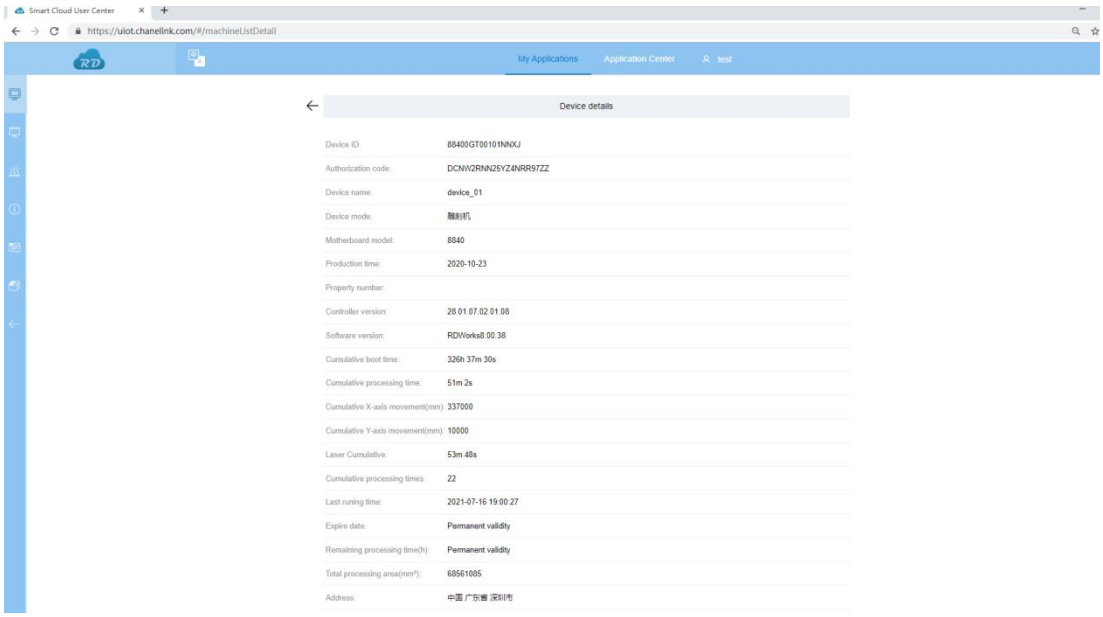
User can edit, un-binding, and view details of the device;



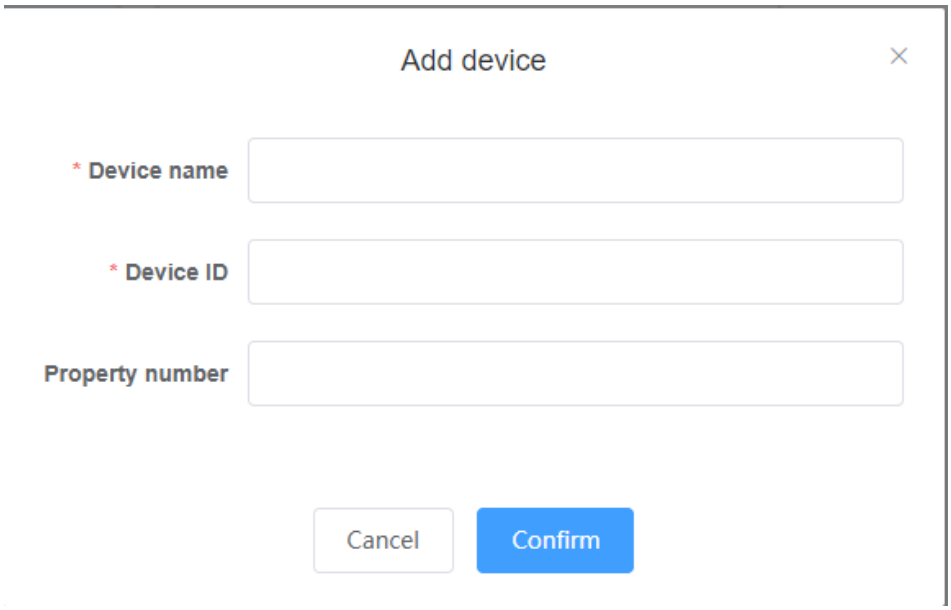
First column: Machine name.

Second column: Property number modification.

Click on the details and enter to the device usage details, as shown below.



6: Add the device button and click to pop out of the following input box:



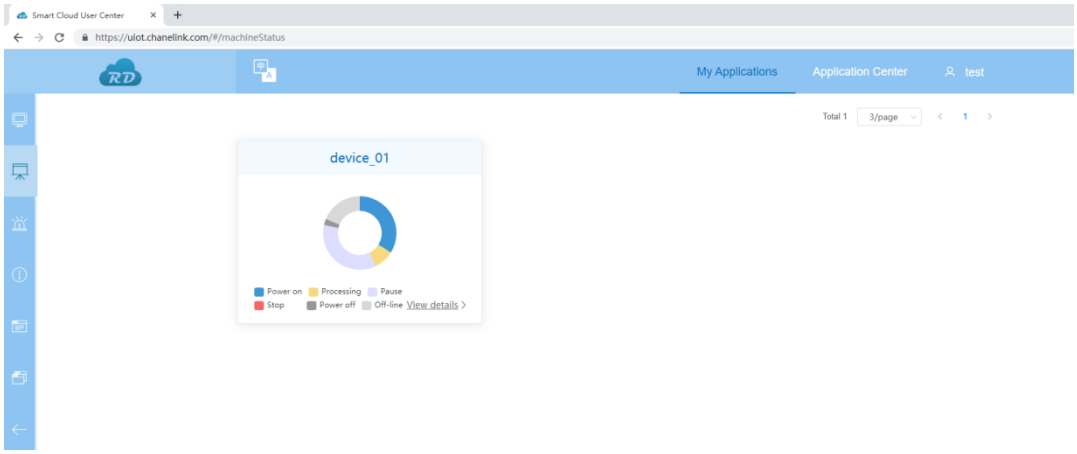
Machine name, machine number, property number three items are required;

It must be entering the machine number that conforms to the specification, otherwise there will be an error prompt, if the input device does not exist will be an error bullet warning.

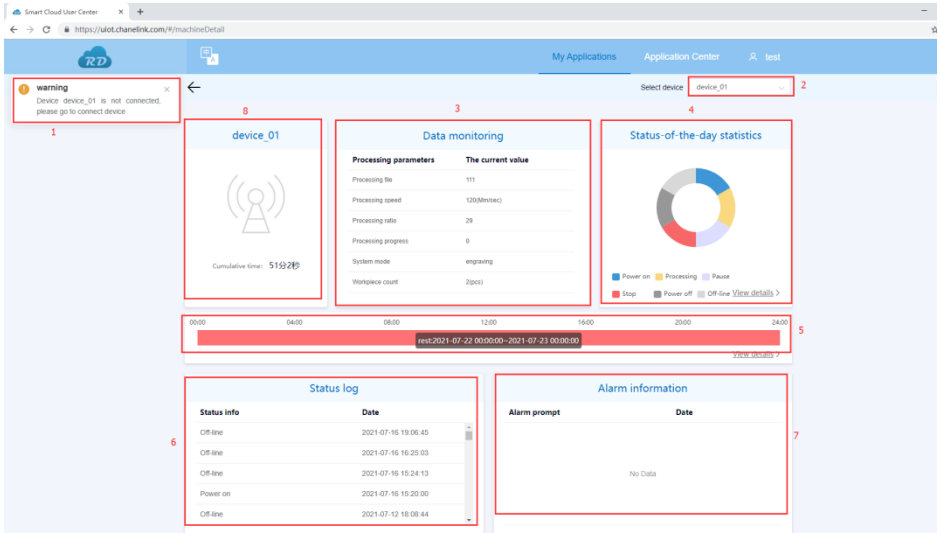
Note: Device additions must be made the first time when login to the User Center, otherwise no data showing.

8.2.6 Usage Status

In the left menu bar click Use Status, pop up the Usage Status page, as shown below.



The usage status home page shows all devices bound with the account, a single module shows a chart of the machine name, statistical chart of the number of states of the machine, Click anywhere on an individual module to go to that device's usage information for that day, as shown below.

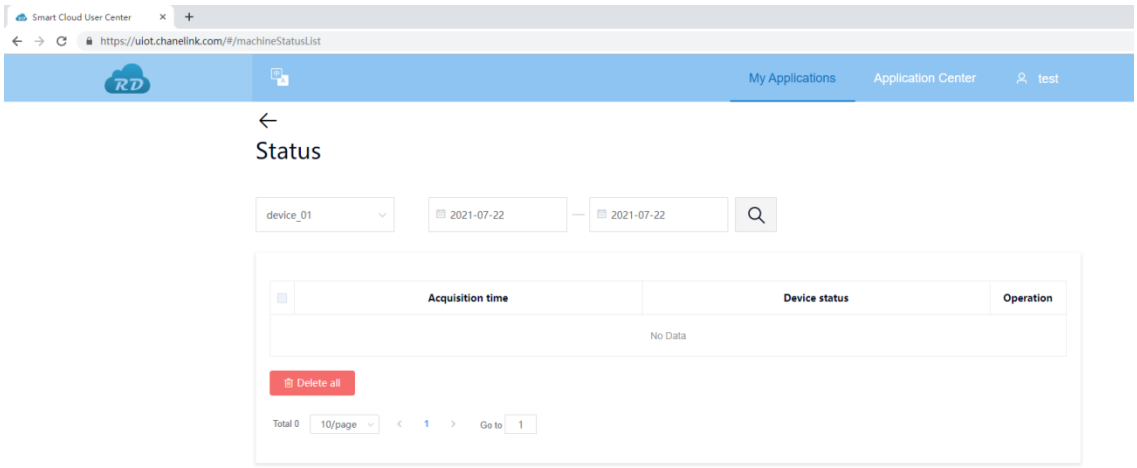


1: This prompt occurs when the device is not connected to the network;

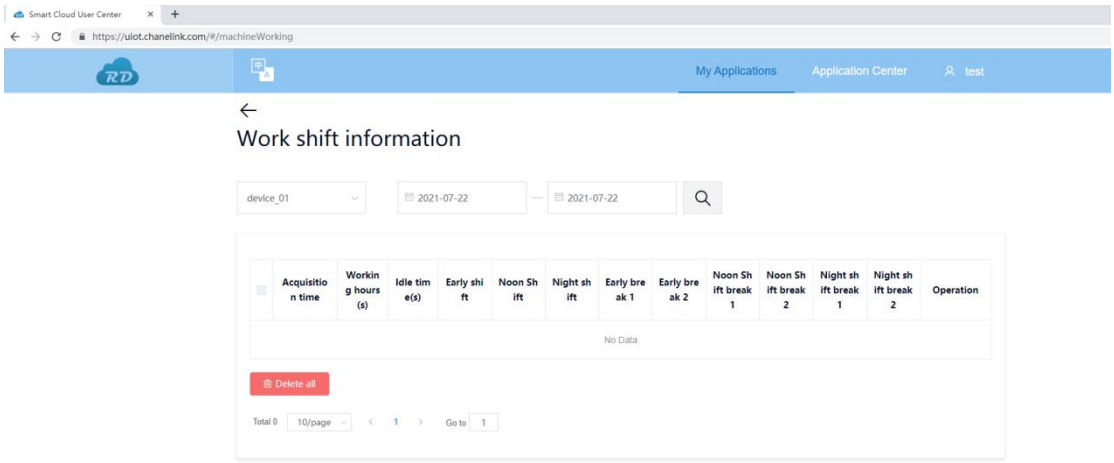
2: Drop-down list to switch the devices bound with this account;

3: Current real-time equipment works information;

4: Device status statistics of the day, click on the 4-module pop up the use of the status table, as shown below, this page can use the drop-down to switch devices, by setting the time period to search for information on all the status of the time period, it can be deleted in bulk, or deleted in a single article.



5: The timeline of all data for the day, click 4-module pop up the usage status table, as shown below, this page can use the drop-down to switch devices, by setting the time period to search for information on all states of the time period, it can be deleted in bulk, or deleted in a single article.



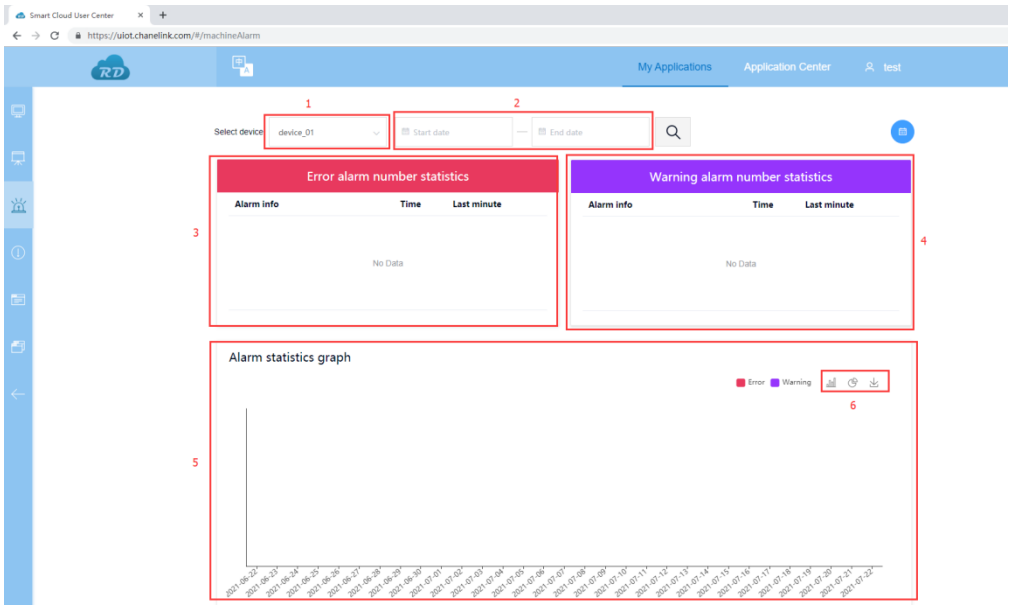
6: The operation log of the device;

7: Alarm information of the device;

8: Equipment connection status and cumulative processing time.

8.2.7 Alarm statistics

Click on the alarm statistics in the menu bar on the left and pop up the alarm statistics page, as shown below.



The interface functions are as follows:

1: Device drop-down list to switch all devices bound to the account;

2: Search criteria, data within the start time to end time period.

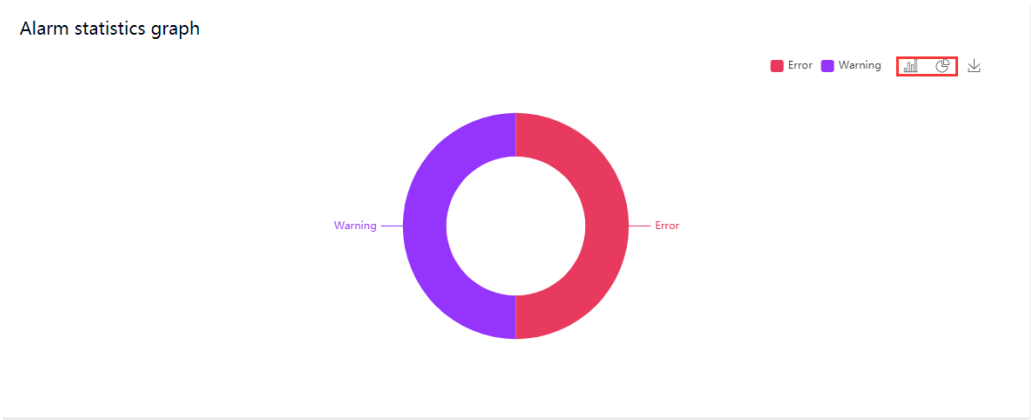
3: Statistics on the number of specific causes of error and the time of the last occurrence.

4: Statistics on the number of specific alarms causes and the time of the last occurrence.

5: A bar chart of the number of errors and alarms occurring during the day for the time period

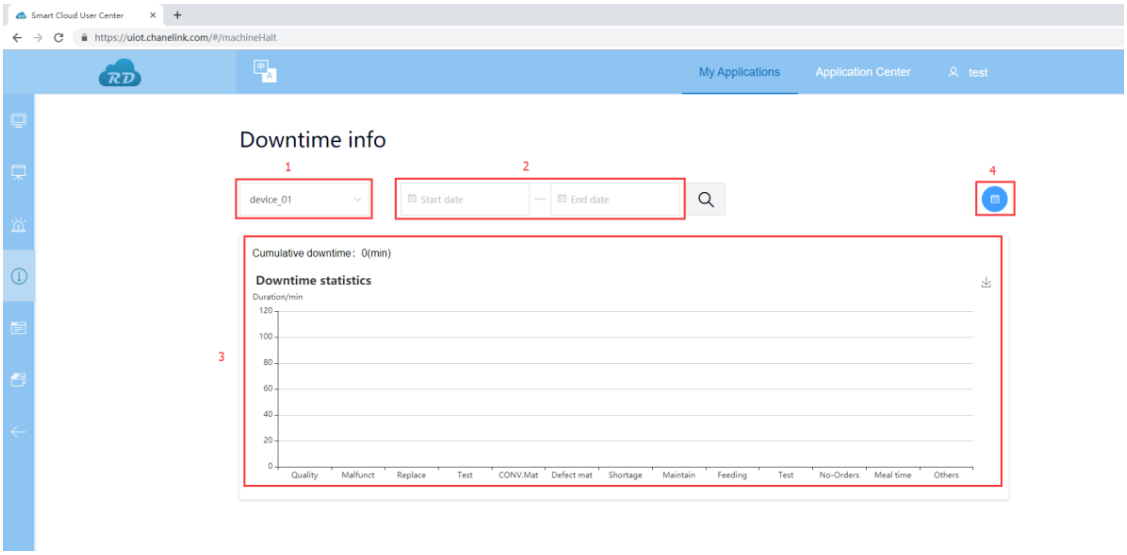
Note: Click on the bar chart Error Warning bar.

6: Click on the second icon above to switch to the following graph, which shows a chart of the number of errors and alarms that occurred during the time period



8.2.8 Downtime information

Click on the stop icon in the menu bar on the left and pop up the Downtime info page, as shown below.



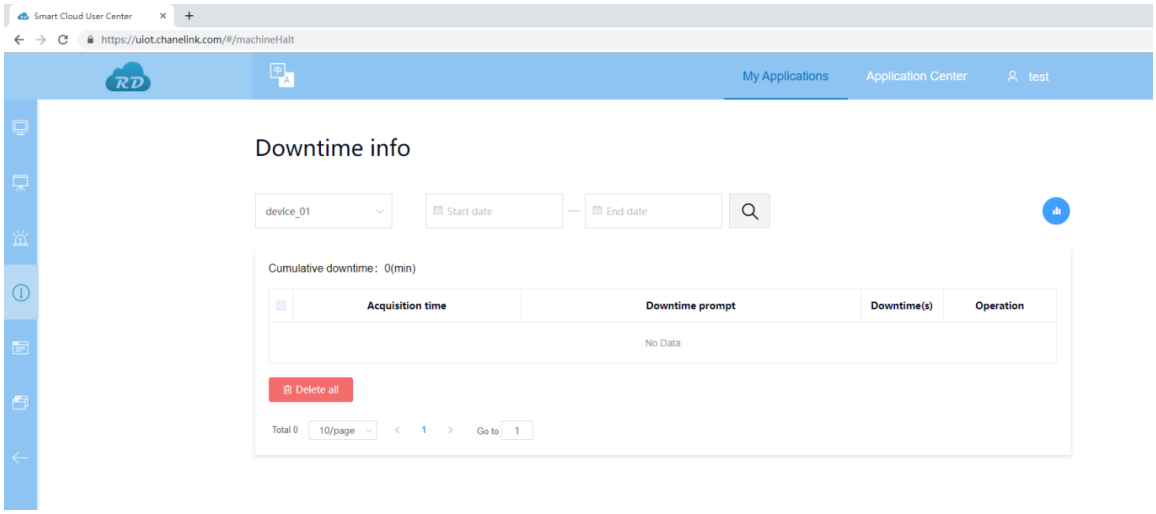
The interface functions are as follows:

1: Device drop-down list to switch all devices bound to the account.

2: Search criteria, data within the start time to end time period.

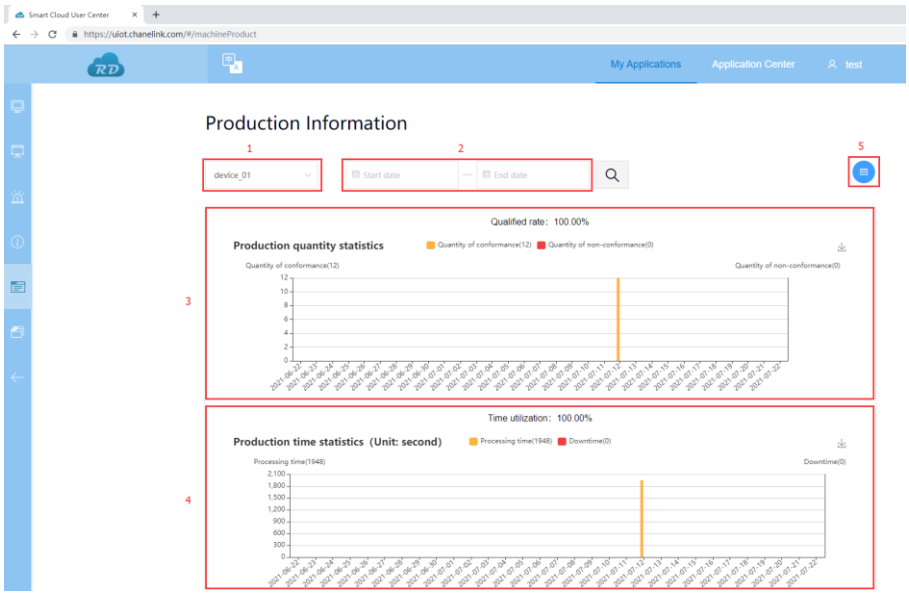
3: The length of the time column chart of the specific reason for the shutdown;

4: The chart switches with the table, which is as follows:



8.2.9 Production information

Click on the production information in the menu bar on the left and pop up the production information page, which is to collect details of the processing of equipment, such as the quantity of production, Processing time, the specific details of the processing documents, etc., as shown below.



The interface functions are as follows:

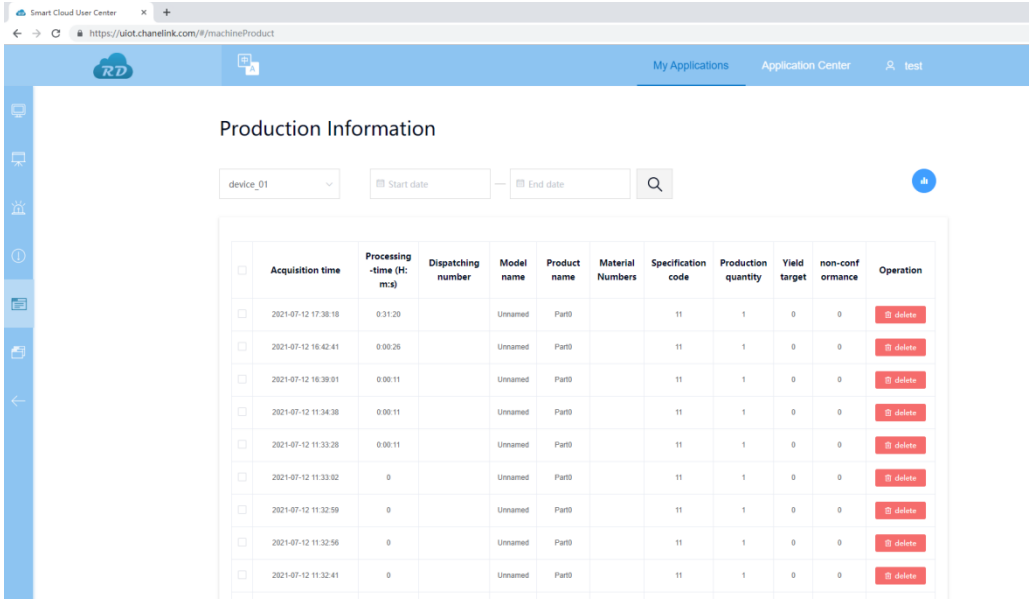
1: Device drop-down list to switch all devices bound to the account;

2: Search criteria, data within the start time to end time period.

3: A column chart of production quantities during the time period;

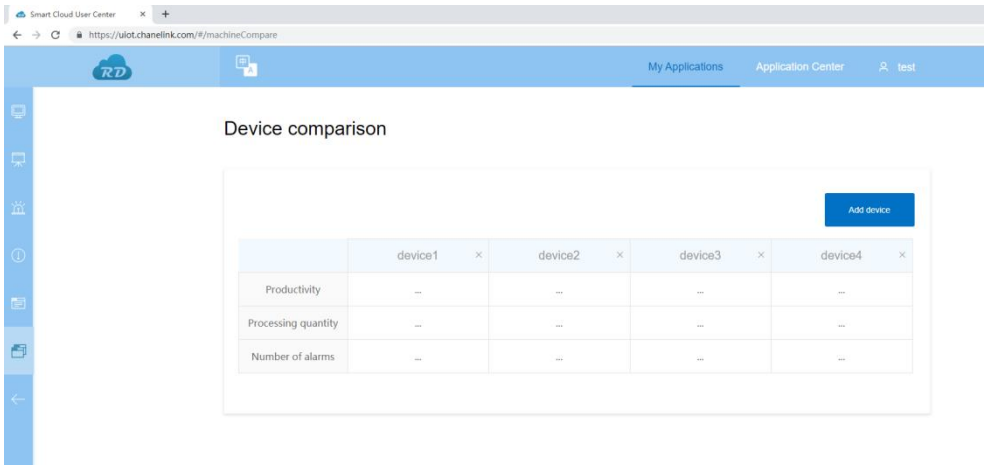
4: Production duration chart during the time period;

5: Button to switch production statistics and tables directly.

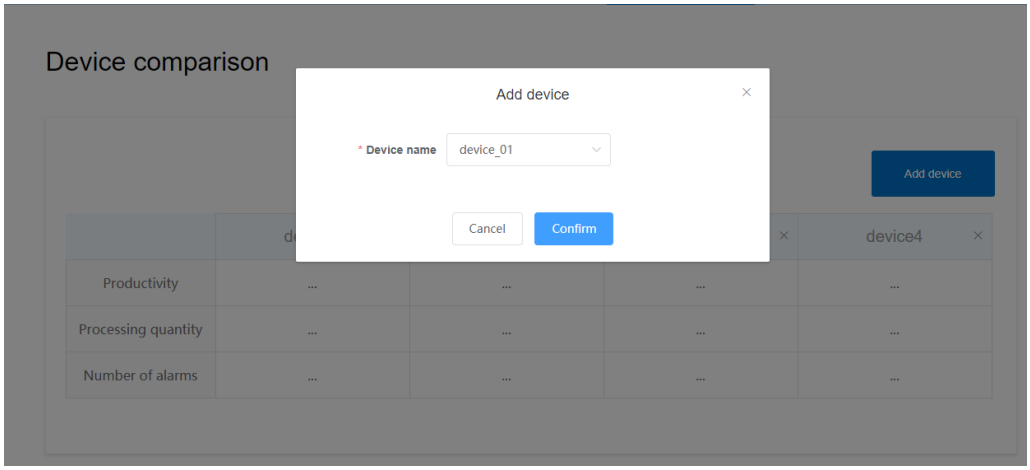


8.2.10 Device comparison

Click on Device Comparison in the left menu bar to pop up the device Comparison page, where the productivity, number of processes and number of alarms of several machines are displayed in tabular form, allowing user to compare the differences between each machine, as shown below.



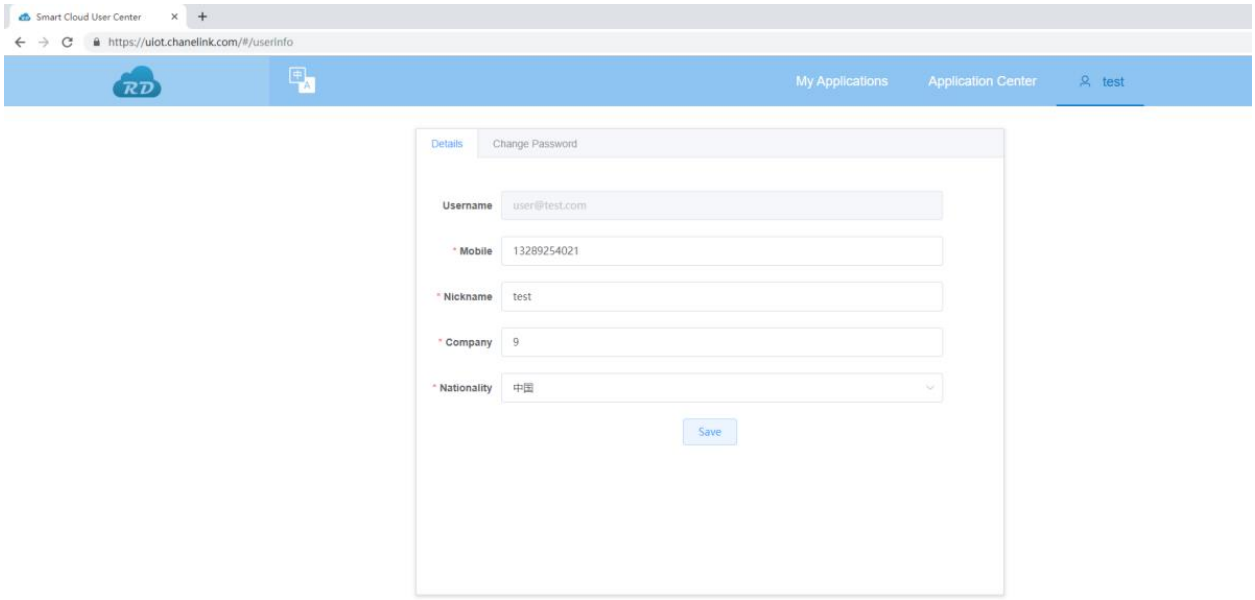
There is no specific device when user first open it, please click Add Device to add the device, when add more than 4 devices a sliding bar will appear to the right, click Add Device to bring up a drop-down list of all devices bound with the account to choose from, as shown in the picture below.



Click on the device name drop down list to select the device to be added, click on unhide to hide the pop-up box and confirm the selection of the device shown to the comparison table.

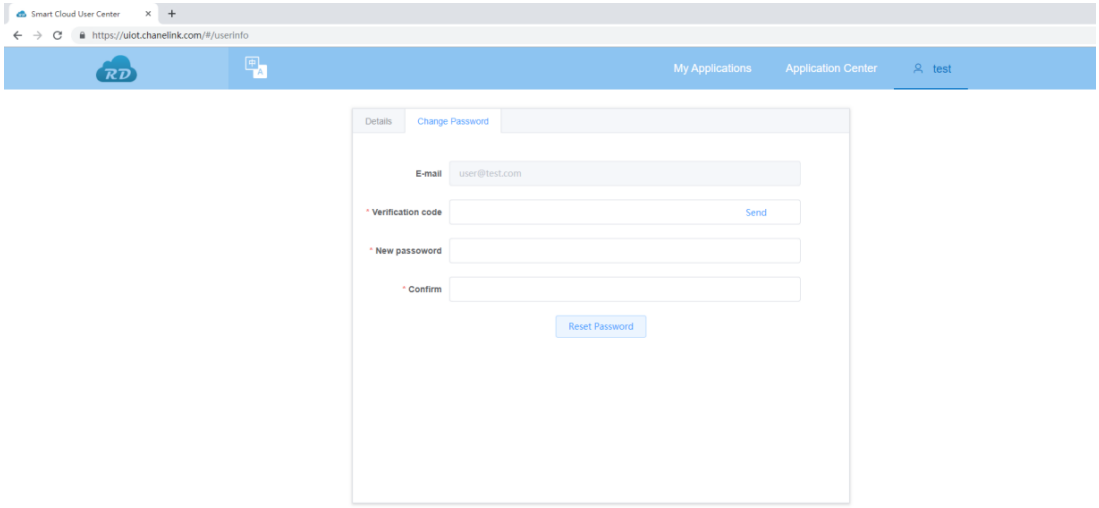
8.2.11 My profile

From my application, click on my profile to view the details of the account and change the password, as shown in the following image.



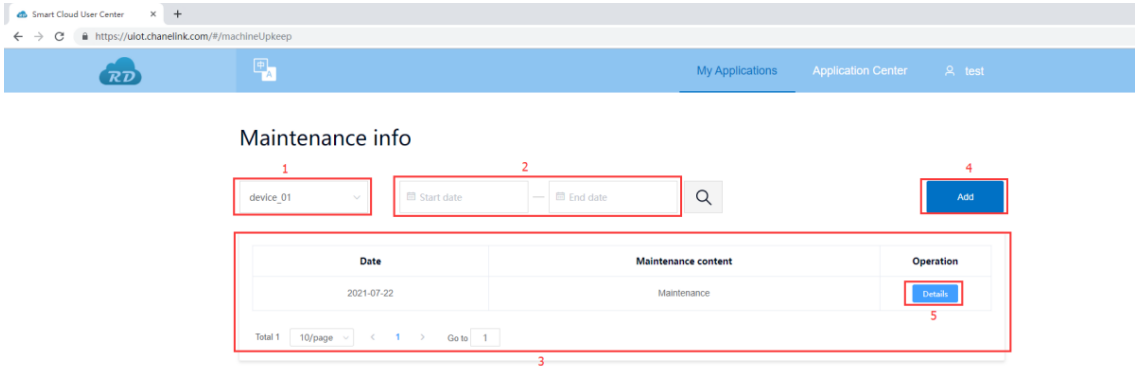
User name cannot be modified, but the nickname, company name, country can be modified, after the completion of the modification click the submit button.

Click to modify the password to change the password, get the verification code which send to the account number mailbox, fill in the verification code correctly, and fill in the new password, as shown below.



8.2.12 Maintenance management

In my application, click maintenance management view the maintenance records of each equipment, if the equipment has a new maintenance, repair, replacement operation, click add button to record the operation of the parts, as shown in the following image:

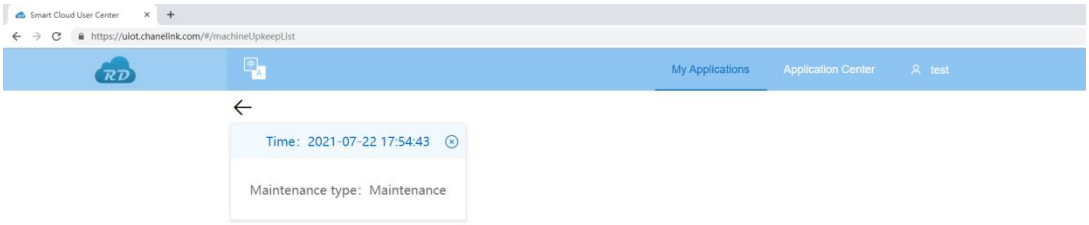


The interface functions are as follows:

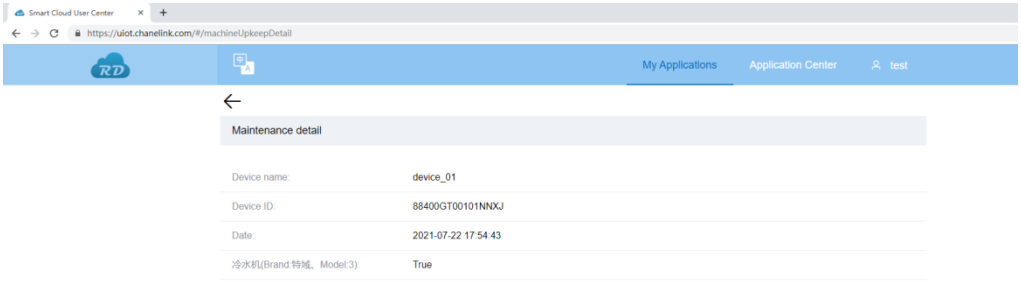
1: Device drop-down list to switch all devices bound to the account;

2: Search criteria, data within the start time to end time period.

3: The same maintenance operations within a day are shown as one line of data in the table, click on details 5 to see the details, as shown below:

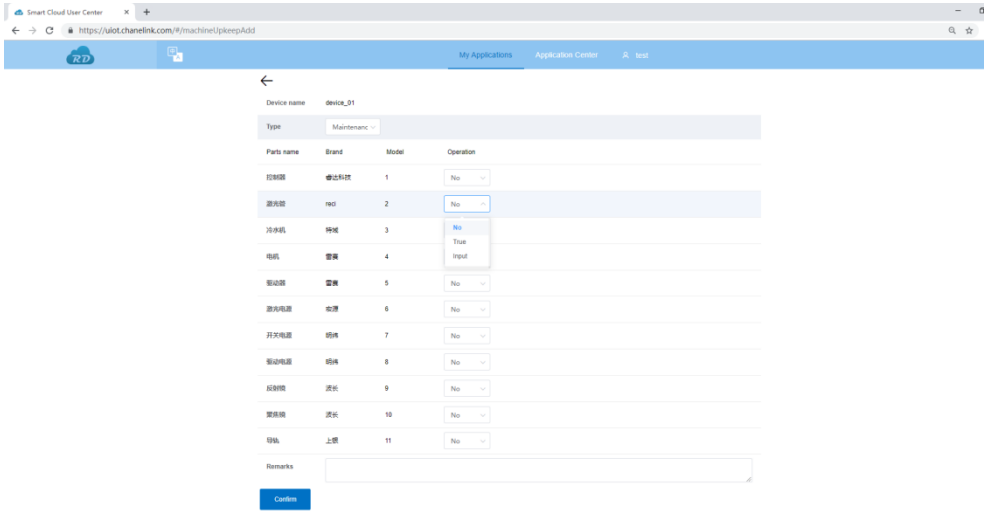


Click on the '×' to delete a single record, click on the module to view the details, as shown below:

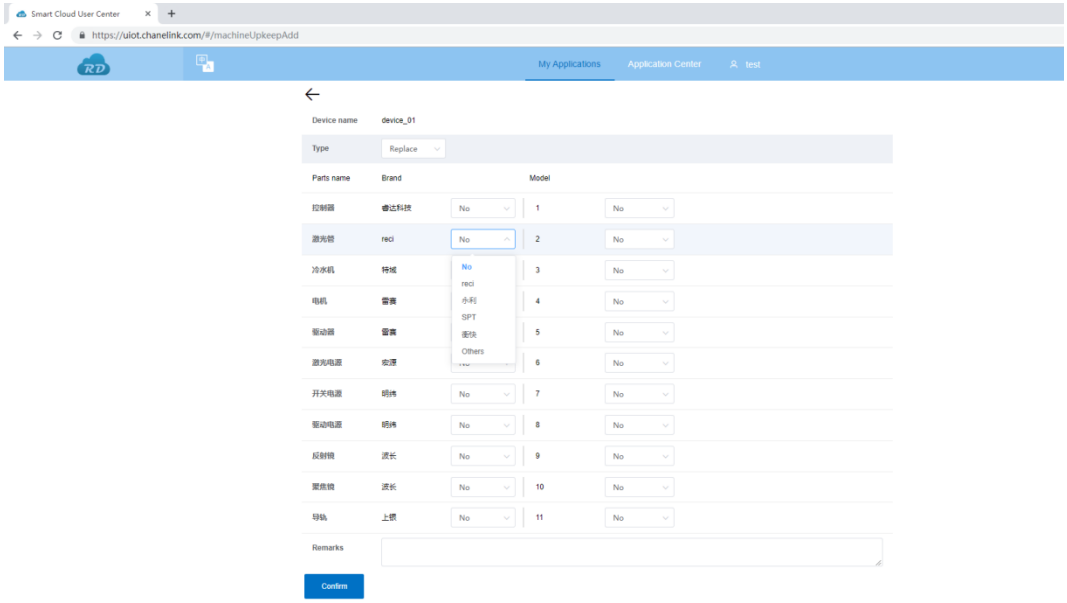


4: Click the add button to add maintenance log, three types of operation: maintenance, repair and replacement, corresponding to three different pages.

Maintenance, repair: User can do records and make notes for the selected parts of the equipment:

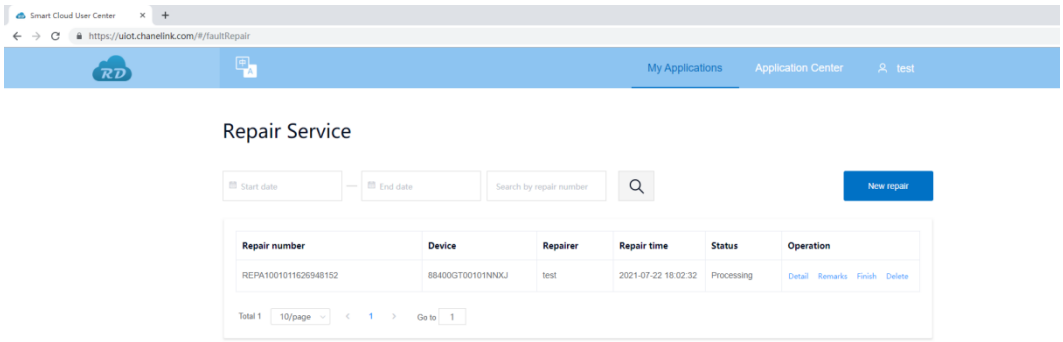


Replace: User can do records and make notes for the selecting the part for the device, such as the replacement brand.

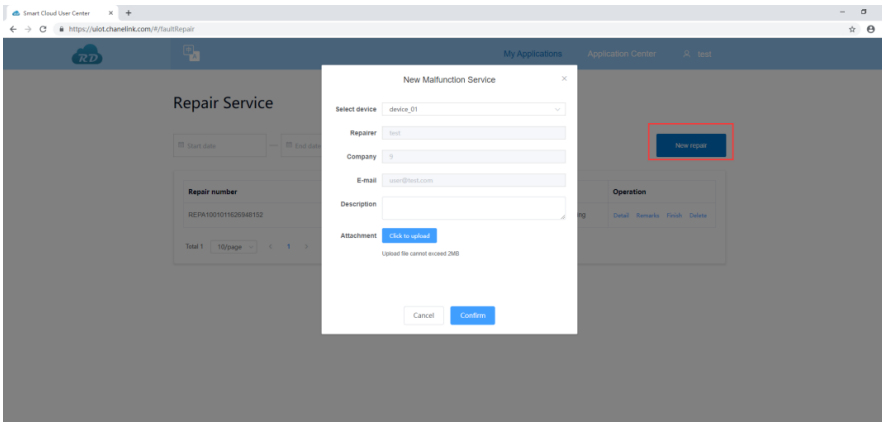


8.2.13 Maintenance and repair

In my application, click On Repair service, which first appears as all added repair records under this account number, as shown below:



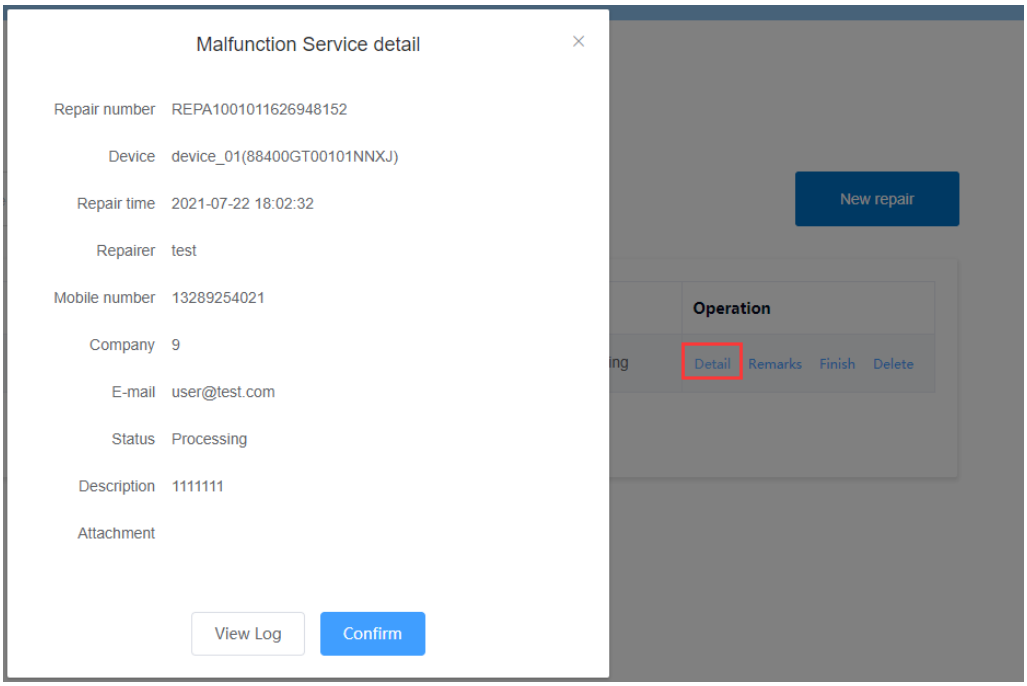
When user need to repair, click New Repair, pop up the repair bar, as shown:



First click on the Select Device drop-down list to select the device to be repaired, the repairer, company, email information is default under the account, it cannot be modified here, in the description box enter the fault-related description, click on the attachment can upload all format files (the file limit in 2MB), after filling in the click on confirm to adding, after the addition successful will automatically generate a unique Repair number .User can check the progress of this report in the status bar.

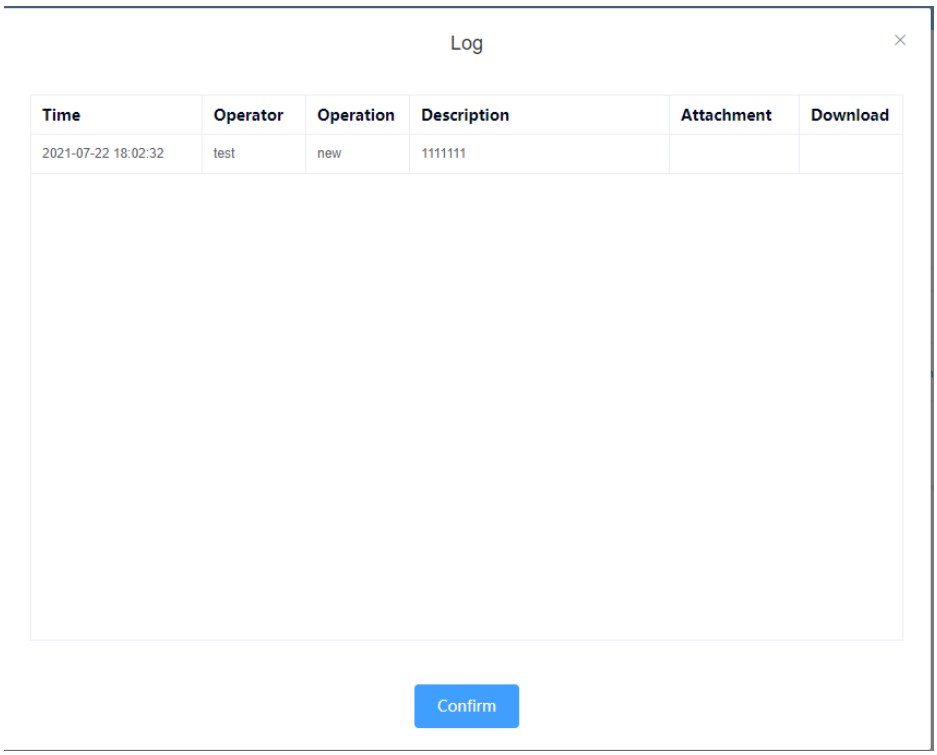
The operation list has the following function buttons, details, remarks, finish, delete;

DetailS:

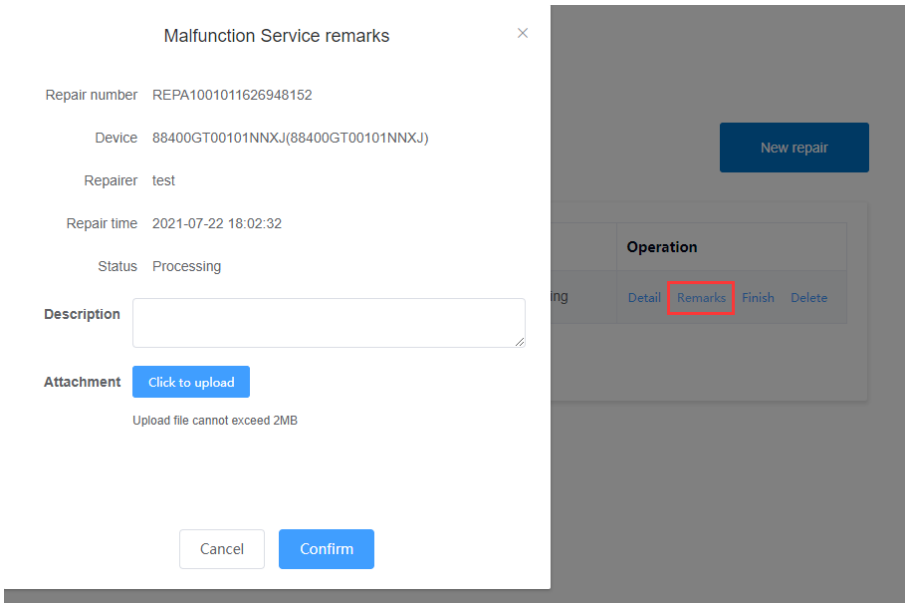


Click details to view the details of the failure, click view log to view all replies to the message, and when there are

attachments user can click Download to download :



Remarks:



Clicking on remarks to reply to this repair, it will be display in the log list.

When this repair information is in the processing state, click Complete to convert the repair information to the Completed state after it has been resolved.

When a repair information is not needed, you can click Delete to delete this repair information.

Note: Users can click on the details to view the log at any time to view all replies to the article, or download attachments at any time.→

Chapter 9 Detailed description of manufacturer/user parameters

The main contents of this section:

- Manufacturer parameters
- User parameters

9.1 Manufacturer parameters

(1) Motor parameters

X/Y/Z/U-axis parameters

- **Directional polarity**: Modifying the directional polarity causes the motor to move in the opposite direction. The purpose of modification is to make the axis move towards the home position on reset. If the axis moves away from the home position on reset, the direction polarity of the axis is incorrectly setting and should be modified.
- **Limit Polarity:** Used to set the voltage mode of the limit signal. If a low signal is entered to the mainboard when the motion axis reaches the limit position, the limit polarity should be set to negative at this time.
- **Breadth:** The maximum distance of this motion axis can move, depending on the machine.
- **Origin Offset**: If the axis enables hard limit protection, the value should usually be set to 2 to 5mm, if set to 0, the motion axis runs to the minimum coordinate 0, it is possible to make the limit effective, which will trigger the hard limit protection function incorrectly, so that the machine emergency shutdown. If hard limit protection is not enabled, the value can be set to 0 to5mm.
- **Control mode**: Dual pulse and pulse-and-direction mode is optional, depending on the type of motor driver actually configured by the machine, generally in pulse-and-direction mode.
- **Motor steps:** The pulse equivalent of the motor, which corresponds to the absolute distance value of the moving axis when a pulse is sent to the motor. Until the value is set correctly, the machine can be allowed to cut a larger rectangle (with a larger graph, with less error) and automatically calculate the motor step by drawing and measuring the length.
- **Hard Limit Protection**: The hard limit protection function used to enable the axis.
- **PWM rising edge in valid**: the pulse signal used to set the motor driver is active along the rising edge or the falling edge, the controller uses the falling edge when the item is not enabled, and when the item is enabled, the controller uses the rising edge to be valid.
- **Enable Reset**: If the machine is configured with the axis, the axis "Reset Enable" option should be turned on and, if the axis is not configured, the axis "Reset Enable" option should be prohibited. The significance of this parameter is to control the "power-on reset" option in the user parameter and the "axis reset" function in the function key to prevent the user from incorrectly resetting a motion axis that does not exist.
- **Start speed:** the speed at which the motion axis starts directly from rest. If this value is too large, it will cause the motor to lose steps, jitter or even whine. If the inertia of the motion axis is high (heavier axis), a smaller start speed can be set, if the inertia of the motion axis is low (lighter axis), then the start speed can be increased appropriately. Typical values are e.g. 5~30mm/s.
- **Maximum speed**: the highest limit movement speed that the axis can withstand. This parameter is related to the drive capacity of the motor, the inertia of the moving shaft and the transmission ratio. Typical values are e.g. 200 to 500 mm/s.
- **Maximum acceleration**: The maximum acceleration value of the movement axis during acceleration and deceleration, if too large an acceleration setting will also cause the motor to lose steps, jitter or even

produce whistling, if too small a setting will result in slow acceleration and reduce the overall running speed of the graph. A typical setting range is 800 to 3000 mm/s2 for axes with high inertia, such as the Y-axis corresponding to the beam, and 8000 to 20000 mm/s2 for axes with low inertia, such as the X-axis corresponding to the trolley.

- **Emergency stop acceleration:** If the axis is enabled with hard limit protection, an emergency deceleration stop will be applied to the axis at an emergency stop acceleration when the axis reaches the limit position. This value can be 2 to 3 times the maximum acceleration of the axis.

Key parameters

- **Key start speed:** The starting speed at which the key moves this axis on the keyboard, which cannot be higher than the start speed of this axis.
- **Key Acceleration:** the acceleration value of the key when moving this axis, which cannot be higher than the maximum acceleration of this axis.
- **Key Reverse:** controls the direction of movement when the key is pressed manually to move the axis of movement. When the direction polarity parameter is set correctly, if the axis moves in the opposite direction when the direction key is pressed on the operating panel, the key reversal is enabled.

➢ Laser parameters

- **Laser tube configuration:** single / double tube optional, set according to the actual number of laser tubes configured by the manufacturer.
- **Laser type:** glass tube, RF laser (no pre-ignition pulse required) and RF laser (pre-ignition pulse required) optional.
- **Laser attenuation coefficient**
- **Laser tube enabling:** when the laser tube configuration is a double tube, lasers 1 and 2 can be enabled respectively.
- **Minimum energy**
- **Maximum energy**
- **Laser frequency**
- **Pre-ignition frequency**
- **Pre-ignition pulse width:** When an RF laser is used and pre-ignition pulses are required, the characteristics of the pre-ignition pulses can be configured using the pre-ignition frequency and pre-ignition pulse width.
- **Water protection enable:** When water protection is enabled, the controller must be connected to the water protection line, otherwise the machine will not emit light, if water protection is not enabled, the water protection line can be left unconnected and the controller will not detect it.

Laser frequency is used to set the pulse frequency of the control signal used by the laser, the glass tube is generally set to about 20KHZ, RF tube is generally about 5KHZ; maximum/minimum power (%) is used to set the limit power value of the laser, that is, in operation, the maximum power set by the user can not

be higher than the maximum power value set here, the minimum power value set by the user can not be lower than the minimum power value set here If the laser is used for a period of time, the power is attenuated, then the laser power can be fine-tuned by setting the laser attenuation coefficient, which is 0 in the case of no attenuation.

➢

提示	If only a single laser tube is configured, only one laser parameter is displayed.

Other manufacturer parameters

Machine configuration

Machine type:

➢ **Machine type**: In most cases, you should choose a general engraving machine, the other types of machines are specific models.

➢ **Drive mode**: In general, user should select " belt stepper type " and when selecting other types, the control algorithm will change slightly.

➢ **Feeding mode**: One way / two way selectable. When unidirectional feeding is selected, the coordinates are not checked and the feeding is always in one direction; when bidirectional feeding is selected, the system checks the maximum and minimum coordinates, feeding in one of the odd directions and in the other direction in the even direction, the first initial direction can be changed by setting the direction polarity or by modifying the positive or negative value of the feeding length. This parameter must be configured with the "Z-axis function" as the "loading axis" to be effective

➢ **Power failure delay**: 0 to 3000ms can be set. After the power grid is powered down, the system power supply will not be immediately reduced to 0V, there is a delay during the period, the delay value set here should be basically the same as the actual power outage delay value. If the setting value deviation is large, the second processed graphic is either not closed or coincides too much when the power-off continues to be done.

提示	After the configuration parameters in the factory parameters, such as direction polarity, control mode, laser type and laser frequency, the system needs to be reset, and the modification is completed before it can take effect.

Enable parameters

➢ **Enable open cover protection:** If this item is enabled, the controller must be connected to the open cover protection line or the machine will not work.

➢ **Enable Fan: To control** the fan's switch with the in-out Wind signal sublayer, you must enable this parameter, no Wind signal output for other signals.

9.2 User parameters

(1) Cutting parameters (only affects the way the cutting works)

- **Idle speed:** This parameter determines the maximum speed of all lightless straight lines during the machine's motion.
- **Idle acceleration**: The maximum acceleration of the straight lines when laser off. The idle speed and idle acceleration can shorten the working time of the entire graphic, but too large settings may lead to jitter in the trajectory.
- **Turning speed:** The speed at sharp corners during cutting is also the lowest speed in the entire cutting process.
- **Turning Acceleration:** The acceleration at sharp corner turns when cutting. The turning speed and the turn acceleration setting are too large, which will cause the turn to shake, the setting is too small, it will affect the cutting speed.
- **Cutting acceleration:** The maximum acceleration when laser on throughout the cutting process.
- **Cutting mode:** fast cutting and precision cutting. Fast cutting gives priority to cutting speed, precision cutting gives priority to cutting results.
- **Acceleration mode:** T-type acceleration and S-type acceleration. the T-acceleration makes the whole cutting process faster, but too fast a T-acceleration mode results in a cut that is inferior to that of the S-acceleration.
- **Idle moving delay:** If the parameter is 0, there is no delay after idle, otherwise after idle moving the cutting speed is slowed down and delayed.

(2) Scanning parameters (only affects the scanning working mode)

X-axis start speed
Y-axis start speed
X-axis acceleration
Y-axis acceleration

The above four parameters are used to set the starting and acceleration of the two axes during the scan. The higher the starting speed and acceleration values, the faster the scan.

- **Line shift speed:** This parameter is designed to control the maximum speed at which the previous row moves vertically to the next row while the scan works. If the row-to-row spacing is large when scanning, or if the distance between each chunk is large when scanning the chunked graph, and user need to pinpoint each row or block, and set the scan wrap speed to a lower value.

Scan mode: Common mode and special mode are available. If the special mode is enabled, the laser power should be increased, the lower the facula percentage, the more the laser power attenuates and the higher the laser power should be set if the same level of scanning depth is to be achieved. The purpose of selecting the special mode is to make the laser high power laser on in short time, in the depth of the scan, to achieve a flatter bottom effect, but it should be noted that if the facula is not properly adjusted, it may not achieve this purpose, and high-power laser on in short time working mode will have some impact on the laser life. The system defaults to

the common mode.

- **Facula size:** This parameter is invalid when the scan mode is selected in common mode, and it works when a special mode is selected. The controller controls this parameter between 50% and 99%.

提示	The cutting and scanning process parameters must not exceed the limit parameter values in the axis parameters. If the shaft parameters are exceeded and the setting is illegal, the system will automatically override the process parameters with the shaft parameters.

(3) Feeding parameters

- **Feeding delay:** it can set 0 to 300s, the previous work is completed and delayed after this setting value, the feeding axis began to move. This delay easy loading and picking of materials on the feeding device during the time delay.
- **After Feeding delay**: it can be set 0 to 9.9s, convenient feeing device movement in place, delay to shake, waiting for the feeding axis completely stationary before the second work.
- **Whether to feed line by line:** If the line-by-line function is enabled, the virtual array of shapes in the Y direction will be machined in the same position, with the feed axis moving once for each machining.
- **Feed-by-row compensation:** Due to the inaccuracy of the feed axis movement, this item can be set to compensate for the feed length.

(4) Reset the parameters

- **Reset speed:** The speed at which the X/Y axis is linked to the origin.
- **The X-axis is powered on and reset**
- **The Y-axis is powered on and reset**
- **The Z-axis is powered on and reset**
- **The U-axis is powered on and reset**

The parameter fields for the above four parameters are Yes and No optional to configure whether the axes are reset on power-on.

(5) Frame parameters

- **Frame mode**: "laser off frame" is in idle to preview the frame, "laser on cut frame" can achieve the processed graphics cut down manually, "four-corner pulse" is in the four corners of the frame pulse the dots, through four points can visually see the size and position of the graphic. The speed of the frame is the speed value set on the keyboard when the system is idle, and laser on, the minimum/maximum power of the laser on is the corresponding value set on the keyboard when the system is idle (the point-out power at the four-point tap is the maximum power value set).

提示	If the border crosses the border, the interface prompts for out-of-bounds information, and if you press ok, the system cuts the border with the maximum/minimum coordinates, and then walks the border. You can also discard the border operation.

- **Whit**

(6) Other user parameters

- **Array processing method:** User can choose between bi-directional arrays and uni-directional arrays, which only work for virtual arrays. Bi-directional array: i.e. cutting of the array back and forth in sequence; uni-directional array: always cutting of the array from one direction to the other. When unidirectional arrays are selected, each array unit moves in exactly the same pattern, with identical smoothness of movement, but is slightly more time consuming than bi-directional walk arrays. The bi-directional walk array is selected by default**.**
- **Return position:** User can select the positioning point and not return. This parameter determines where the laser head is stop after each operation.
- **Focal length:** The distance from the laser head lens focus to the origin of the Z axis. This parameter is not valid when there is no autofocus function.
- **Material thickness:** The thickness of the processed object.
- **Non-Contact focusing:** When selected yes, focus mode is contactless focusing, otherwise contact focus mode. This parameter defaults to contact focus mode.

  The above three parameters are used to set the autofocus function, AF mode can be divided into contact focus and non-contact focusing two modes, each mode is divided into two modes of motion. The autofocus function is done by the D-axis.

  Contact focus:

  (1) Movement mode A :D shaft directly drives the laser head downwards until the laser head touches the surface of the material, at which point the controller considers the position to be the origin position of the D axis, and then the D axis moves a certain distance in the opposite direction, which is the focal length value in the parameter setting. In this mode, the material thickness parameters are not valid.

  (2) Motion mode 2: D-axis drive platform upward, until the material touches the laser head, at this time the controller considers the position to be the origin position of the D-axis, and then the D-axis then moves a certain distance in the opposite direction, the distance is the focal length value in the parameter setting. In this mode, the material thickness parameters are not valid.
- **Reverse clearance** X: Reverse clearance of the X axis, set to 1um depending on whether the machine actually has a reverse clearance, and if the value is not zero, the control system compensates for the reverse clearance.
- **Reverse gap** Y: Reverse clearance of the Y axis, set to 1um depending on whether the machine actually has a reverse clearance, and if the value is not zero, the control system compensates for the reverse clearance.

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Contact: 0755-26066687

Fax: 0755-26982287

Adress: 202-203,B-Block,Technology Building, 1057 Nanhai Avenue,Nanshan District,, SHENZHEN, CHINA